THE *Soybean Digest*

REG. U. S. PAT. OFF.

GEO. M. STRAYER, Editor **KENT PELLETT, Managing Editor**

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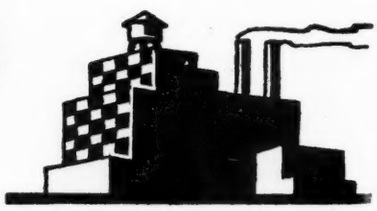

It's the new Purina Mills Soybean processing plant at Kansas City — the 5th in the chain of Purina plants spotted around the soy belt at St. Louis, Missouri; Circleville, Ohio; Lafayette, Indiana; Iowa Falls, Iowa; and, now, Kansas City, Missouri. Five stragetically located cash markets for soybean farmers.

AND THIS?

That's easy. Of course, it's that famous Purina Checkerboard bag—symbol of Purina's feed-making reputation built in a half century in the business.

Soybean growers know when they feed their livestock or poultry good Purina Chows they're using a feed that uses the product they raise. They know, too, that the feed in the Checkerboard bag is always top quality.

No Time for Drastic Acreage Reduction Soybeans have made a lasting place for themselves in the American agricultural economy. The war years provided the stimulus for an expansion in acreage and usage which might otherwise have occupied a period of 10 to 25 years. Largely, it was sound expansion, coming as a result of real demand.

Today the protein supply situation is at one of the most critical stages since the war began. Fats and oils are as scarce on grocers' shelves as at any time during the war.

Soybeans will continue in strong demand and relatively high in price until fats and oils supplies equal needs, until protein supplies become more adequate, and until foreign relief food shipments subside.

Regardless of what governmental guaranteed prices on soybeans may turn out to be, regardless of how the government's processing program may eventually materialize, the United States is going to be badly in need of every possible acre of soybeans in 1946.

Yes, there should be acreage reductions in some places. But they should be on those marginal lands—so far as the soybean crop is concerned—which under ordinary conditions would never have been planted to the crop. Care should be used on lands subject to erosion, just as care would be used in the planting of corn on such fields. Likewise, farms where an unduly high percentage of soybeans has been grown and grass and other legume crops have been neglected, should see acreage decreases.

On the average farm in the great breadbasket of the nation, soybeans will be second only to corn in per acre returns in 1946. That is, assuming that governmental agencies will not, in their efforts to control farm income, go berserk in their evaluation of the price of a bushel of soybeans as compared with competing crops. In spite of all that may be said to the contrary, it still costs two and one-fourth times as much to produce a bushel of soybeans as a bushel of corn. With corn prices at well over a dollar, soybean prices of $1.75 to $1.80 as rumored do not add up.

Patriotism has been an influential factor in raising soybean acreages in the war years. That day is past. The "comparable" price of soybeans has not been comparable in returns. The 1946 governmental programs should be aimed at a guaranteed floor—but not a regimented price.

With prospects for good returns from 1946 crop soybean farmers will respond with desired acreages. We urge that every possible effort of college agronomists, USDA men, grain dealers, seedsmen and growers be directed into channels which will encourage acreages near wartime levels. The simple truth is we need—and badly—the end products of the crop.

Soybeans may be, as Secretary Anderson says, "the fair-haired boy" of the agricultural world. Without adequate per acre returns they will soon leave home. Hybrid corn, new oat varieties, speciality crops, grass and legumes will all take their toll of acreage. The final decision will be made in Washington. One sure way of getting soybean acreage is to pay adequate prices. Nineteen forty-six looks like the year in which to get soybean price relationships in proper adjustment. Acreage will then take care if itself.

How to Use Spergon with Legume Inoculants On Soy Bean Seed

Repeated tests have indicated the high value of Spergon in preventing seed decay and increasing emergence, especially in a cold wet planting season.

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4. **Plant within two hours after inoculating.**

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ILLINOIS PIONEER

John T. Smith Passes

John T. Smith, 65, Tolono, Ill., one of the Midwest's pioneer soybean growers and long an active member of the American Soybean Association, died at Burnham City hospital December 21.

He had been bedfast for several months and was moved to the hospital when his condition became serious. He was the father

JOHN T. SMITH

of Gilbert Smith, A.S.A. director from Illinois.

"John T.," as everybody acquainted with soybeans affectionately knew him, started with the crop in 1908, when he procured seed of two different varieties from Dr. W. J. Morse of the U. S. Department of Agriculture.

In 1921, John T., with Frank Barton and J. E. Johnson, both of Champaign County, took the lead in inducing farmers in that part of Illinois to standardize on a new strain of so-called black hilum Manchu. He took 59 of the original 80 bushels of this seed and increased it on his farm. These communities standardized on this particular variety for several years.

In 1924, when interest in the combine for harvesting soybeans was developing, he held a soybean harvesting demonstration on his farm, with everything from the old reap hook, through the cradle, flail, mower, self rake, binder and finally the combine being shown. From that time on John T. harvested his soybeans with a combine, and his farm served as a laboratory for at least one farm machinery manufacturer for several years. The firm's engineers would bring down their experimental models and simply camp at the Smith home at harvest time.

At the time of the harvesting demonstration Mr. Smith had the A. E. Staley Mfg. Co. set up and maintain a dryer to demonstrate the drying of soybean seed after combining. It was then common opinion that in all seasons the beans could not be left in the field long enough to dry, so some type of artificial drying equipment was needed.

Mr. Smith attended the Silver Jubilee meeting of the Association at Urbana in September 1944.

He is survived by Gilbert and four other sons, George, St. Louis; Charles in Germany; and Robert and John at home.

—s b d—

LABOR SITUATION

To the Editor:

I had planned this next year planting my soybeans in 30-inch rows and keeping one four-row cultivator adjusted just for plowing 30-inch rows. But as strikes continue and the way the labor situation looks, my soybeans will be in 40-inch rows again, using the Richland, Mukden and Lincoln to vary maturity and still hold production up. In spite of the bad weather this last year I had one 40-acre field yield 30 bushels per acre. So you can see why I believe in better production through better farming with soybeans.

HAROLD D. YANNEY,
Renwick, Iowa.

—s b d—

SOY ENTHUSIAST

To the Editor:

I have removed the Florida sand from my shoes and have moved to Maryland where, as in the Middle West, something will grow.

Some soybeans planted in Cecil County, mostly Wilson (for hay). But I am getting the county farm agent interested and expect to have several experimental plots next year of different varieties for seed.

Samuel T. Busey,
Rising Sun, Maryland

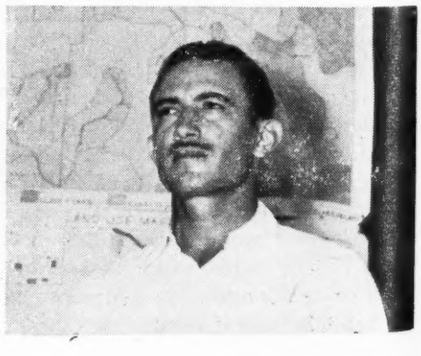
Mr. Busey has taken his interest in soybeans from Michigan to Maryland via Florida.—Editor.

—s b d—

VISITOR FROM S. A.

Francisco Targino de Si-Quiero of Brazil is spending a year in Illinois learning all he can about the production of soybeans, at the request of his government. As he is under the tutelage of Dr. W. L. Burlison, head of the department of agronomy at the University of Illinois, he is in good hands.

—Illinois Agricultural Association Record



How MULTIWALLS *doubled* PACKAGING PRODUCTION and halved packaging costs!

Before this company switched to Multiwall Paper Bags, they were using barrels and jute bags. Three men were needed to fill and weigh these cumbersome containers. These three men were also required for the closing operations. Labor costs were high, while production seldom exceeded 9,000 lbs. per hour.

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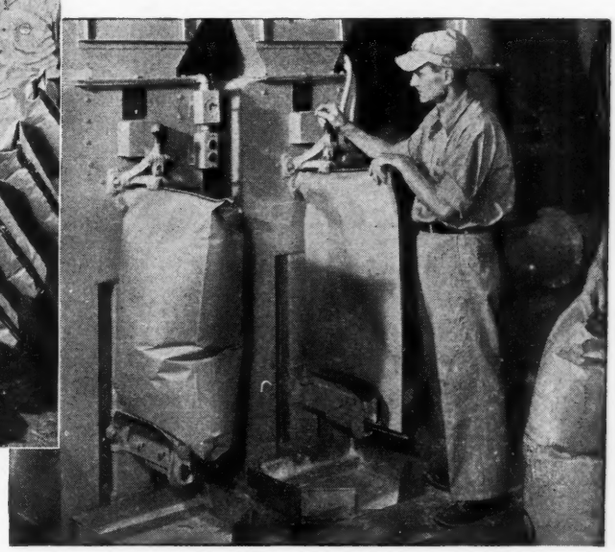
Left: These 3 men pack, check, and stack 18,000 lbs. per hour in Multiwall Valve Bags. *Below:* Showing the tandem machine arrangement of the St. Regis machines which enables one man to do the bag-filling job.



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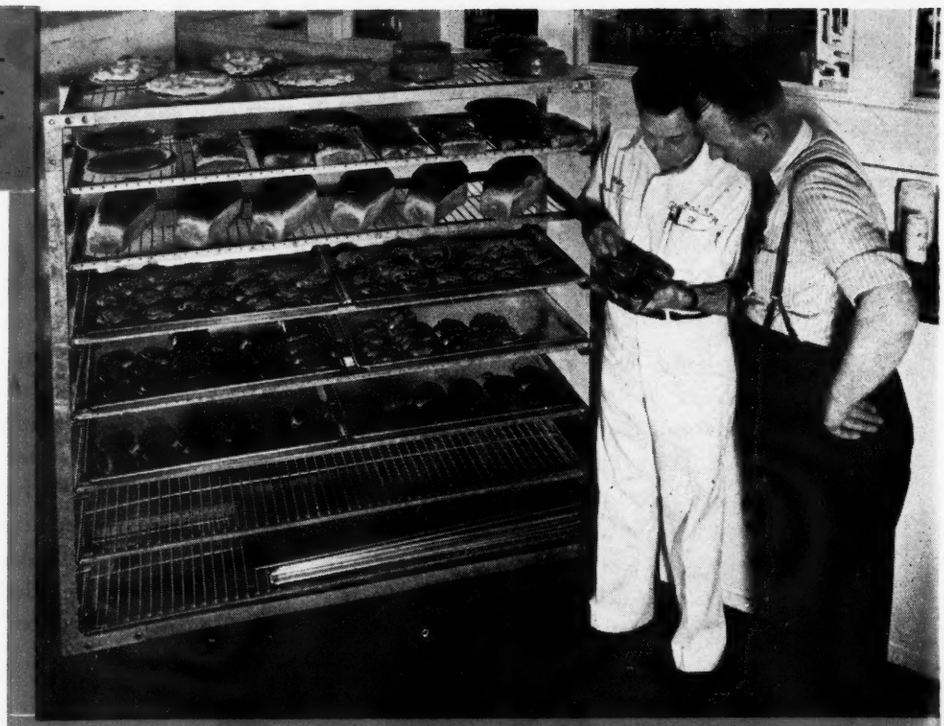
• Third of a series of articles on industrial research. The first appeared in November.



A corner of the research bakery at Central Soya, Inc.

THE RESEARCH PROGRAM OF Central Soya

FOR THOSE interested in the production and processing of soybeans, and in the sale of the ever-growing list of soya products, a glance at what is being done today by one of America's foremost soya processing companies will prove worthwhile.

The job today embraces a carefully planned and very comprehensive research and development program involving agronomy, chemistry, nutrition, engineering and any number of related fields.

The agronomist's problem, for example, entails study of the correct varieties of soybeans for different areas, advising farmers on the preferred planting, fertilization and harvesting practices, and in overcoming the erroneous idea which gained popularity some years back, that soybeans would wreck the soil. The agronomist's task, simply put, is to see that soybeans are produced, and in great enough quantity to supply the nation's current needs.

The nutritionists carry on constant experiments calculated to reveal the nutritive quality of soybean products, both in livestock feed, and in the food products intended for human consumption.

Plant technicians are coping always with the problems of production, and are searching always for improved methods.

A typical soybean processing firm is the Central Soya Co., Inc., one of the four largest in America, which has home offices in Fort Wayne, Ind., and processing plants in Decatur, Ind., and Gibson City, Ill.

Taking first things first, it might be well to show something of the operation of the Central Soya agronomy department.

As J. Ward Calland, director of agronomic research, has pointed out, "The overall effect of this crop upon the farmer's soil and his rotation system, and upon the yield of other crops and how well it can be fitted into his general farming scheme, are as vital to the soybean processor as good plant facilities and sound merchandising."

One of the first steps taken to advance agronomic research at Central Soya was the establishment of a 5-year fellowship with the Purdue University Agricultural Experiment Station. Under this fellowship a trained agronomist is employed full time, devoting his entire attention to the problems of growing soybeans.

In cooperation with several other departments at Purdue, this agronomist, Dr. F. A. Frank, is working on a number of definite research projects set up for the purpose of getting additional facts and information on some of the most important production problems the farmer has to consider when he grows soybeans.

Another step was to set up an extensive survey of soybean cultural practices, production problems, varieties, yields, and rotations in the principle soybean producing areas of Ohio, Indiana and Illinois. Personal interviews are being held with county agents, farm advisers, Triple-A committeemen, farm managers, prominent growers and others in nearly 100 leading soybean growing counties.

An important feature of this survey is the summarizing by counties and areas, of several thousand questionnaires on which soy-

bean growers have answered various questions relating to cultural practices, varieties, yields, rotations and fertilization. Along with some general questions by means of which they can indicate their attitude toward soybeans as a crop.

Posters showing the preferred varieties of soybeans for various areas have been distributed in Illinois, Ohio and Indiana. The distribution is handled through county agents, farm advisers, elevators and grain dealers, AAA offices and other agencies or businesses who have close contact with farmers.

SOYS AND SOIL PRODUCTIVITY

Other projects are under way, designed to learn more about the relationship of the soybean crop to soil productivity; erosion, weed control, clover stands, fertilization, and the general effect of the soybean on other crops in the various rotations.

While the agronomy department at Central Soya is comparatively new, the research laboratories studying the bean itself were first established when the company was founded, a little more than a decade ago. Today, chemists and technicians occupy large buildings with their laboratories, and have access to the latest in equipment, scientific libraries and other investigational aids.

"In maintaining a laboratory on the scale which now exists," said Dr. J. K. Gunther, directing head of research, "the management has had one predominant objective: to make products from soybeans that will have properties so desirable to the user that a firmly established business will be built around these, thus making the venture profitable for the user, for the soybean processor, and for the soybean producer."

In this laboratory there are four groups of chemists and technicians, each group specializing in one phase of soybean study. Each is headed by a highly trained and experienced group leader. In charge of the laboratory and responsible for its activities is the research director.

The research in the oil and fatty derivatives group is concerned primarily with improved oil quality and the production of high grade lecithin. This latter material is found in the oil fraction of the soybean and is known as a phosphatide. It has a multitude of uses in the food and industrial fields. Soybean oil has received a very greatly increased acceptance during the war by the shortening and margarine producers, due largely to the shortages in other oils. The research chemist, of course, is not unaware of this, and knows that to hold its position, the soybean oil must be a *better* oil, particularly with regard to flavor reversion, in the postwar period.

Furthermore, research now in progress will afford a much greater use of soybean oil in resins, protective coatings, and other industrial products. Soybean oil, of course, has for some time been used in these and other industrial applications, although the work in these fields has been curtailed considerably since the war began.

The increased use of soya flour and lecithin in the food field is a main objective of the Central Soya bakery research division. There, a number of research bakers work with the various flours now being produced, in order to develop the technical information needed to enable the sales force intelligently to advise the food industry. In the research bakery are developed the formulae for the commercial bake-shop production of cakes, sweet goods and pies. Soya flour, of course, is not similar in composition to the cereal flours, since it is very high in protein content, and low in starches. Because of this, it must be used in sparing amounts as in the case of other rich baked goods ingredients such as egg and milk solids. The values of this product in baked goods is well proven but the problem of adapting soy flour to specific bakery formulas is worthy of continued study.

Bakery research is also aiding in evaluating experimental flours produced by the soya flour research group in their quest for improved products for food use. The search always is for flours that will taste better and bake better.

The flour research division is developing new flours with special properties for several large industrial users who expect to employ them in the manufacture of adhesives, insecticide spreaders, and so on.

PRODUCTS FROM PROTEIN

The protein research division is concerned with the development of special products from soy protein. Isolated protein from the extracted meal has many properties that make it valuable as a starting material for industrial products. The supply of raw material for soy protein is enormous and the cost is relatively low, both of which make research on the material more promising. In order to have acceptance, however, these protein products must have properties quite different from those they originally possessed. Here the research chemist applies himself. In some applications a more soluble product may be required, in others more adhesive strength and in still others an altogether new property such as stabilizing action in an emulsion. The indications are that research on protein will bring about

These posters were distributed in Ohio, Indiana and Illinois as part of the agronomy program for better varieties.

some very excellent products that can compete successfully with many of the well established proteins now in use. The protein component of the soybean is by far the most complex material that is present and the task of modifying its properties to meet use requirements is not a simple one. We have made considerable progress in this field. More can be expected.

STUDIES OF NUTRITION

One of the most rapidly growing departments of the Central Soya Co. is that devoted to the study of the nutritional qualities of soybean products.

The work of these departments falls into three general categories namely: (1) nutritional studies on the proper use of soybean oil meal as a feed for poultry and livestock; (2) studies on factors concerned in properly processing soybeans to produce uniform, high-grade, soybean oil meal; and (3) studies on the production and use of soy products as a human food.

To carry out this branch of the work, Central Soya has a well-equipped rat laboratory, a chick feeding laboratory, a broiler house for feeding tests on chicks in large groups, under practical conditions; a laying house for tests on egg production; a calf barn for tests on the nutritive requirements of calves; and a hog house which is well-equipped for swine-feeding investigations.

In poultry, swine and calf feeding tests a considerable volume of data has already been obtained showing the excellence of the protein of properly-processed soybean oil meal when it is used in rations adequately fortified in other essential nutritive factors.

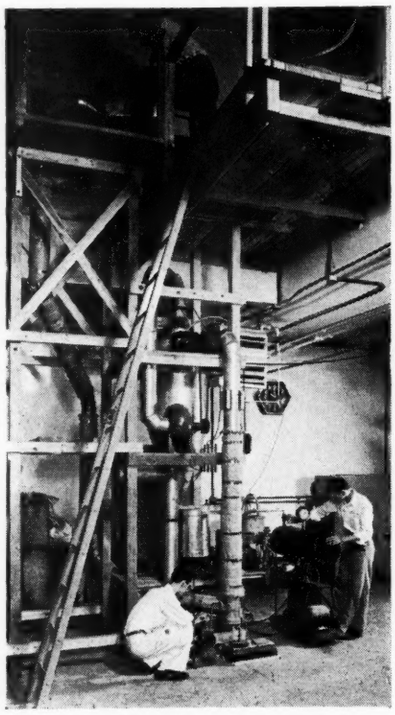
In addition to work carried on in the company's own biological laboratory, Central Soya is actively supporting research work in the state agricultural experiment stations. At the present, the company has an established fellowship in the swine division of the University of Illinois and is supporting a joint fellowship on calf nutrition at Ohio Experiment Station.

Work both at the state experiment stations and in the company's biological laboratory has induced a better understanding of the importance of vitamins and the interrelationship of the vitamins and proteins in animal protein concentrates. As a result, the true comparative protein value of soybean oil meal vs. fish meal, meat scraps and dried milk, has now been established. According to Ralph C. Holder, directing head of the biological laboratory, "soybean oil meal plus a small amount of animal protein which is high in the amino acid known as methionine, gives a combination which yields maximum results." This constitutes a new and very important chapter in animal feeding practices.

Another part of the research program in the Central Soya biological laboratory has been the studies on how to process soybeans to produce soybean oil meal of the highest feeding value.

It has been shown, for instance, that a proper degree of heat and moisture is essential to make of soybeans palatable and highly nutritious products, for use either as livestock feed or human food.

An entire "room full" of white rats is used in an almost endless series of experiments in this field.



An experimental pilot plant of Central Soya.

The technical department of the Central Soya Co. consists of three general groups—the pilot laboratory, the pilot plant, and the plant technicians. In these groups are chemists, chemical engineers, trained and skilled craftsmen and operators.

The first group, that of the pilot laboratory, develops processes from the research scale to produce larger samples of the product and to obtain engineering and process information for application in the next larger scale, that of the pilot plant. This latter is a well-equipped laboratory with unit-process machinery for the drying, cracking, flaking, screening, toasting, mixing, distilling, extracting, filtering, etc., of various products.

After the pilot laboratory has developed sufficient engineering information, a larger plant is designed and operated by the pilot plant group. Their object is to test the process on a large enough scale to observe possible defects before designing a commercial unit, and to produce large enough quantities of the material to make field tests for customer acceptance. Here, the chemical engineers are assisted by skilled operators who maintain exacting process conditions operating on a shift basis in order to test the process under continued operating conditions. A very important sub-division of this group is the mechanical department with its millwrights, welders, carpenters and other skilled workmen who cope with the ever-present problems of making special machinery, changing setups and equipment, in order to develop and improve the process to its greatest efficiency.

Some of the problems currently receiving the attention of the pilot plant group are oil refining, lecithin production, flour for special applications, extraction of by-products, purification of protein, heat treatment of meal, debittering processes for flour, etc. As the processes are developed, all information is incorporated in the design of the commercial unit. The production department then assumes the responsibility for operation, while the pilot group goes on to a new assignment.

The third group, that of the plant technicians or plant chemical supervisors, concern themselves with the established operations. They work closely with the production department, and in Central Soya they are divided into two operational units, soybean processing and feed manufacturing.

The main jobs of the plant technicians include "trouble shooting" when difficulties arise in plant operations; seeing that operating standards are being followed in the plants, making recommendations to the operating departments for increasing efficiency or for producing better products; cooperating with the engineering and production departments for equipment or layout changes when they are needed; testing new machinery for efficiency; and helping in the development of special machinery.

Thus it can be seen that this large and progressive soybean processing company is making full use of research and technical control to develop the most complete and practical application of the inherent values present in the soybean.

—s b d—

LECITHIN ENHANCES VITAMIN A STORAGE

The claim that commercial lecithin from soybeans contains an unknown factor which markedly enhances the storage and blood levels of Vitamin A in the rat is put forward by Charles A. Slanetz and Albert Scharf, of the department of animal care, Columbia University, in *Journal of Nutrition 30:239.*

They believe they have ruled out the possibility that the vitamin A reinforcing factor is vitamin E.

Slanetz and Scharf used a synthetic basal diet containing wheat germ oil. Forty-eight female rats divided in eight groups were fed eight different diets, one containing the basal diet only, the others supplemented with lecithin or other products.

Only with the lecithin, whether heated or unheated, was there a marked effect on the liver and blood vitamin A. The effect was lost when the lecithin was iodized.

"KNOW YOUR OILSEEDS"

STORY OF THE PEANUT

Feeding the vines into a peanut picker. Nuts pour into a tub at the rear.

By MODANE MARCHBANKS, National Peanut Council

THE history of the peanut is reminiscent of the entertaining but improbable report concerning the visiting Hindu who was in a hurry to get to Chicago from St. Louis — and made the trip via Atlanta, Ga.

The peanut journeyed from its birthplace in South America through Europe and Africa before it reached North America. . .

During that dangerous era, when swashbuckling, saber-toting Spaniards roved the seas and pillaged in lands far from their own, long before Senor Columbus made his great discovery, the peanut was grown and eaten by peoples of South America.

In their apparently uncharted and certainly indiscriminate invasions, the Spanish adventurers struck into South America, and added that land to their list of "missions accomplished." When they sailed home, their ships were jampacked with booty — including peanuts.

The nut-like vegetable, its many values belied by its unimposing physique, was cultivated in Spain. When the Spaniards moved on to Africa, they brought it along. It was cultivated in Africa.

Many decades later, long after Columbus chalked up his famed accomplishment, slave traders found a ready market for their human wares in North America. On the long voyages to North America, they kept up the strength of the shackled ones—with peanuts.

That, in a nutshell, is how the peanut came to the United States. Now it represents a major industry in this country, its backbone in the soil of the South. Its fingers touch many links in the chain of living today, and reach out toward new horizons that would better living tomorrow.

Emerging from the soil and through the scientist's microscope, out of the test tube and into the patterns of forward-looking enterprise, the peanut has become related directly to food and medicines, to chemicals and explosives, to clothing, to agriculture, to livestock raising — to many other links in the chain.

It gives livelihoods to tens of thousands of persons, is used by hundreds of manufacturers and can bring profit to a million retail outlets adapted to handle it and its by-products.

Across the South stretch no less than 5 million acres of land that yearly give up billions of pounds of this "nut" which once kept slaves strong.

The farm value of the 1944 crop of peanuts was 188 million dollars. And this does not include the value of some by-products.

Yellowed newspaper clippings indicate that the first peanut market in the United States was established during the last century at Mill Swamp, Va., by one Lemuel Womble, who appears to have "engaged in trading in" the peanut yield of a small number of farms — a few bushels — and shipping to Norfolk, Va.

Not long afterward, Thomas Rowland, of Norfolk — "The Father of the Peanut Industry" — set up the reputedly first peanut business.

The peanut developed into a sizable and growing industry during the Civil War, and boomed after it. The first real spurt seems

to have been touched off by the taste Union soldiers developed for the Southern legume. They brought it back to their homes.

In the 5 years preceding 1870, peanut production swelled as high as 300 percent, and it was given a further boost in 1870 when a man with a thick voice sold bags of peanuts at a circus staged by one P. T. Barnum. It was not long before the peanut was a favorite American delicacy, and the colorful street vendor was whistling his way to prosperity and tradition.

MODERN ADVANCE

However, on a relative basis, the industry was still small, held down by a lack of machinery for picking, cleaning, shelling. The inception of modern plants containing such equipment was the catapult that sent the industry toward its present heights.

The first cleaning plant was built in 1876 in New York City, then the leading market, another rose in Norfolk the same year. By 1890, modern peanut-handling plants were not an uncommon sight. Mills were operating as far north as St. Louis and Cincinnati. The industry's most rapid growth was in Georgia, Texas, Alabama and Florida.

The boll weevil caused it.

In 1905, this pest, one of the few to which a monument has been erected with affection, destroyed so much cotton that all farm entries were in red. The farmers faced ruin. Peanuts promised a ready market at shelling and crushing mills and hog packing plants. They were a source of fine quality hay. The farmers turned to peanuts.

Before World War I, peanut acreage had extended South and West. When that conflict began, there came a growing demand for vegetable oils — and acreage mushroomed. At that time there were no shelling plants in the GFA (Georgia-Florida-Alabama) area, and peanuts had to be crushed in the shell or shipped to the Virginia-Carolina district for shelling. Quickly, shelling and processing plants were built in the area — and have prospered since.

The South's present 5 million peanut-growing acres yield some 2,500,000,000 pounds of peanuts a year.

So vast did the industry become that in 1940 the men in it found it practical to create the National Peanut Council, Inc., which set out to better peanut products and the industry in general. The Council sponsors agricultural, nutritional and utilization research, and cooperates with all institutions engaged in research, among other activities.

As for the story of peanuts from seeding to "circus" . . .

Loose soil is best for the peanut, which blooms above ground after growing within it, and sends "pegs" back into the earth on which it develops. Between 150 and 200 warm days are required during the growing season. The peanut does not produce well where the average day and night temperature is cool. The more important peanut states are Georgia, Alabama, Florida, North Carolina, Virginia, Texas and Oklahoma with a smaller acreage in South Carolina, Tennessee, Louisiana, Mississippi, New Mexico, Arkansas and California.

MISS MARCHBANKS

• *As a matter of factual information concerning a competing oilseeds, we offer this excellent article by the secretary-treasurer of the National Peanut Council. We hope to publish articles on other oilseeds, both foreign and domestic in coming months. See the article on cottonseed in the May 1945* SOYBEAN DIGEST.

Virginia and North Carolina can grow two types — the Virginia and the Spanish, the former including the Jumbo, the Virginia Runner and the Virginia Bunch, which have big pods and are used principally for confections. These latter varieties contain less oil than the Spanish. Spanish and Runner varieties are grown in the southeastern portion of the peanut belt. The western part produces Spanish peanuts extensively. When peanuts are to be grown solely for oil, the Spanish type generally is planted.

Virtually all peanut seed planted is shelled, producing quick germination and requiring less seed. For the control of seedling diseases, it has been found best to treat the seed, before planting, with Arasan, Spergon, Semesan and Organiza Sulphur.

Plowing should be done at least 30 days before planting to cover all vegetation. For a fine weed-free seedbed, the land is harrowed or disced immediately before planting. Different types of peanuts call for different planting spacings and depths. Since yields fall off when peanuts are grown continuously in the same soil, they usually are grown in rotations, of 2 or 3 years.

Ordinary plows are used, but their mold boards are removed and replaced by a special peanut point.

Curing takes from 4 to 6 weeks — perhaps 3, in fair weather. Most common curing method in the Virginia-Carolina area and the Southeast is the stacking of the plants around tall poles. One variation is the Southwest method, wherein plants are stacked in 2-foot piles, and given no protection from the weather. Here, curing is done in from 4 to 10 days, because of the hot dry climate at the harvest season.

In cleaning plants, the peanuts are separated from sticks and trash and run through reels with small opening which allow the dirt to escape. As they drop from the reels fans or other devices take out the lightweight pods.

The pods are sent through polishing drums containing a fine white powder-kaolin or talc — to give them an additional clean appearance.

Grading, or separating, is accomplished when the peanuts descend a series of sloping, revolving cylinders containing spaces regulated for sizes desired.

The shelling process is essentially the same in all regions, although there are slight variations. The peanuts are forced through circular corrugated plates, which crack the pods. The kernels are carried on belts to a separator with a series of perforated screens so adjusted in size that different grades are carried to separate piles. Uncracked shells automatically are returned to the sheller.

The final and one of the more colorful steps is the hand-picking job, done mainly by women who work at long tables which bear "endless" belts that convey the peanuts. Splits, sometimes called "dirty faces" because of the dirt which clings to the concave surfaces, and shrivels are pitched out. The remainder drop for bagging.

There is *no* waste in a peanut crop.

Aside from its transformation into peanut butter, candy, cakes and cookies, the peanut is represented in shortenings, margarines, cooking fats, salad oils and oil for use in explosives. Peanut oils go into medicines. Among other uses it is used as a carrier for adrenalin and penicillin. Use is made of them through sulfonation in textile industries.

LIVESTOCK FEED

After oil is removed by crushing, the resulting meal forms a high-protein food for livestock. Flour for human consumption is made from the peanut cake produced in specially handled plants. Peanut shells are used as filler in livestock feed and fertilizer. Increasing use is being made of them as a litter for poultry. The shells are used as fuel in part of the shelling plants, some of which are equipped to blow them directly into furnaces from shellers. Three tons of shells about equal a ton of coal in heating value. The shells also have been used in the manufacture of dynamite. The high cellulose content indicates its use in the pro-

duction of "cork-like" products used as a gasket material.

Peanut hay (the dried vine) is high in protein and makes a livestock feed considered even better than grass hay from the nutritional standpoint. Recent improvement in curing methods and studies have given it added prestige among livestock growers.

Roasting usually is done in perforated revolving cylinders similar to coffee roasters. The process takes about 20 minutes.

Among the biggest buyers of peanuts are the salters, whose purchases in recent years have been exceeded only by those of peanut butter makers. Up to a few years ago the salters had bought heavily from the Chinese.

Experiments have been made in the interest of salting peanuts within the shell, and one patent has been granted for a process which forces a saline solution through the shell's pores.

In 1943, salted peanuts represented a 65 million dollar business.

Back in 1890, Dr. J. A. Kellogg of the Battle Creek (Mich.) Sanitarium decided the dietetic values of peanuts for invalids could be increased by reducing them to a smooth paste. The result, of course, was peanut butter.

At first, the paste was made exclusively for ailing persons. But it was not long before it gained a wide reputation and acceptance. today, scores of factories are devoted solely to peanut butter making.

Top-grade peanut butter may be made from Jumbo, Virginia Bunch, Virginia Runner and Spanish peanuts. In the past few years, several variations of the "butter" have been produced:

Chunky — bits of unground peanuts are mixed with finely ground peanut butter.

Homogenized — oil is added to finely ground peanut butter to prevent separation.

Honey — enough honey is added to bring out the delicate flavor of fresh roasted peanuts.

Yeasted — yeast is added to regular grind peanut butter to enrich its food value.

Fortified — vitamin enriched, usually to restore the vitamin content lost in roasting.

Long before the turn of this century, peanuts were used in candy-making. In 1895, a popular delicacy was the flat bar of sugar containing broken pieces of peanuts. In a recent report, candy makers listed 75 materials they used. The peanut was in first place in quantity.

Before World War I, relatively little United States peanut oil was produced. During that war there developed a tremendous demand for vegetable oils to supply glycerin for munitions, and to meet demands for margarines and lard substitutes.

ACREAGE CLIMBS

Following the Armistice in 1918, there was a decrease in demand for vegetable oils, and imports from the Orient combined with the decrease to lessen, for a period, the interest of Southern farmers in this crop. But, after some years of fluctuation, peanut acreage in the Cotton Belt has increased sharply since 1929.

In 1940, some 40 percent of the peanut crop was crushed for oil. At present, about 90 percent of the total peanut oil production is used for shortening, margarine and other foods.

The Home Economics Department of the Department of Agriculture found in recent survey, of the relative values of lards and other fats for deep fat frying of potatoes, that peanut oil was superior to all other fats and oils tested.

Peanut oil also is used in shaving and face creams and cosmetics.

Its value in the after-treatment of infantile paralysis long has been recognized, and it is used in numerous hospitals for massaging. It is used in combination with adrenalin in the treatment of asthma and like ailments, and with penicillin.

Peanuts for crushing — for oil — do *not* require elaborate cleaning treatment. They are run through dirt reels and sometimes through shakers and stoners before being passed into hullers. Rollers mash them into pulp, which is cooked in a steam-jacketed kettle. A haircloth mat is folded over the cooked pulp, which emerges, after being pressed, in the form of a cake.

The cake is placed in a hydraulic press which is brought up to 4,000 to 4,500 pounds of pressure. The oil runs into drains below, and is pumped into storage tanks.

In the refining process, crude peanut oil is treated with a caustic soda solution which neutralizes the free fatty acid and precipitates much undesirable coloring matter. Bleaching is accomplished by mixing a hot refined oil with a small quantity of fuller's earth, to which activated carbon may be add, if needed.

OIL MEAL FROM PEANUTS

The peanut cake — the solid residue from peanuts crushed in the hydraulic press — is ground into meal and sold directly to stock feed manufacturers. In some instances, the cake is used as fertilizer. When the plant is designed the cake is used for peanut flour, being rich in niacin, the vitamin which prevents pellagra, as well as other factors of the B-complex vitamin. Peanut flour contains four times as much protein, eight times as much fat and nine times as many mineral ingredients as wheat flour. It is used as a protein extender and not as an alternate for wheat flour.

Defective peanuts are fed to chickens. Seed germs and broken pieces of peanuts are used in pigeon or squab feed. Shells have been used recently as plastic filler and for insulation and floor sweeping compounds.

Before World War II, a wool-like fibre called "Ardil," was developed in England from peanut protein.

As for the peanut's food value — it contains about 26 percent protein plus a fat content of 40 to 50 percent. Valuable amounts of riboflavin, niacin and minerals are present. The red skin is rich in Vitamin B_1, more of which is found in the nut itself.

The following are being studied currently:

1. Stability, palatability and appearance of peanuts to prevent oil separation in peanut butter and rancidity in unshelled, shelled, blanched and roasted nuts.

2. Vitamins in roasted peanuts and peanut butter, to find the effect of processing on vitamin content, and to establish procedures that will insure high vitamin retention.

3. Control of insect infestation, to find ways to control damage.

(Continued on page 33)

Experimental peanut plots. Different varieties mature at different times requiring that experimental plots be dug over a period of 2 months.

The Effect of SIMULATED HAIL INJURY to Soybeans*

By ROBERT R. KALTON and J. C. ELDREDGE**

HAIL damage to the soybean crop has been relatively severe in certain parts of Iowa. The large acreages of soybeans in recent years and the numerous storms have tended to accentuate these losses, of primary concern to farmers, insurance adjustors, and processors in areas where hail damage has been prevalent. In an attempt to answer some of the questions which arise following hail damage, the Iowa Agricultural Experiment Station, in cooperation with the U. S. Regional Soybean Laboratory, initiated a study in 1943 to determine the effects of simulated hail injury on the yield and on other important characters. Only the more pertinent results will be discussed here.

The general outline of the experimental work in 1943 and 1944 was as follows: In 1943, one variety, Richland, was used in the investigations. In 1944, Lincoln also was used in addition to Richland. The beans were grown in rows spaced 40 inches apart in order to eliminate as much as possible competition between differentially treated plots. Simulated hail injury was inflicted on replicated rows at five different dates (stages of growth) throughout the growing season in 1943. Ten dates of damage were used in 1944, five of them corresponding to the same stages of growth in 1943. Finally, at each date of damage, three degrees of severity of damage were inflicted. These were called light, medium, and heavy. Check rows, with no damage, were used for comparison.

The stage of growth and the degree of damage inflicted at each of the five dates used in both years are shown in Table I. As the results with Lincoln and Richland were practically identical in 1944, only the results with the latter will be discussed, in this way making it possible to consider on a uniform basis the two years' data.

The removal of leaves and parts of the stems was accomplished by means of upward strokes with an instrument made by mounting several wire hooks on a paddle-like board. A clipping shears and supple switches also were used to advantage. With these implements it was possible to approach the appearances of actual hail injury and to obtain the three degrees of damage.

The results in 1943 showed that the greatest reductions in yield from all degrees of defoliation and other injury occurred at the fourth date of inflicted damage. At this stage, the soybean plants were beginning to show pods at the top and flowering had ceased. Defoliation during the early stages of growth, when the plants were less than a foot tall, caused only small reductions in yield. Plants cut off immediately above the cotyledons (seed leaves) at the first date, when they were 4-5 inches tall, produced new branches in the axils of the cotyledons and made good recovery. Simulated hail injury at the last date, when the pods were full and the bottom leaves were turning yellow, appeared to be primarily mechanical. In other words, losses in yield at this date were due almost entirely to pod removal.

TABLE I. Degree of damage and date of damage at each stage of growth in 1943 and 1944.

A. Description of Damage Inflicted at Each Date

1. Light—20 to 30 percent leaf removal; 0-5 percent plants broken over; 3-8 percent growing points removed; and minor stem bruising incidental to leaf removal.
2. Medium—45-65 percent leaf removal; 5-10 percent plants broken down as a result of bruising; 5-15 percent growing points removed; and plants bruised between boards with one blow.
3. Heavy—First date all plants cut off just above cotyledons, and at succeeding dates 80-90 percent leaf removal; 20-40 percent growing points removed; 15-25 percent plants broken down as the results of bruising; and plants bruised between boards with two blows.
4. Check—No damage.

B. Stage of Growth at Each Date of Damage

Date No.	Height	General Description
1	4- 5"	First trifoliate leaves completely unrolled, second ones just unrolling.
2	12-14"	Average of six trifoliate leaves unrolled. Few flowers noted.
3	20-22"	Eight to ten trifoliate leaves unrolled, some stem branching. Full bloom stage. Lower pods beginning to form.
4	34-36"	Pods evident in tops of plants, lower pods full length, plants midway between full bloom and first leaf fall.
5	37-39"	Bottom leaves just starting to turn yellow, beans in top pods at edible stage.

COMPARISON OF TWO YEARS

The results from the expanded tests in 1944 agreed generally with those obtained in 1943. In 1944, the average yield of the undamaged rows was highest and then decreased progressively from light to heavy damage. These mean yields for the severity of damage were an average for all dates of damage. However, the reductions in yield for any one degree of damage (light, medium, or heavy) varied considerably with the stage of plant development. As in 1943, reductions in yield from simulated hail injury were small in the early stages of growth but much greater when damage was inflicted during early pod formation, as measured by the effect of simulated hail injury.

Other plant characters of importance in soybean production also were affected by the varying severities and dates of damages. Time of maturity, which is important when there is frost danger, was somewhat affected. Simulated hail injury at the earlier stages of growth tended to retard ripening. The more severe the damage, the longer was the delay in ripening. Defoliation after pod formation had begun, had practically no effect on maturity. Some reduction in plant height was observed following damage at the earlier dates, with the greatest reductions in height coming from damage at full bloom stage. Damage at later dates had little effect on plant height. Seed quality, which determines the market grade and price, became poorer as the severity of damage increased. The poorest quality was obtained from injury at the last two dates. Many shrunken seeds also were found in the

*Contribution from the Iowa Agricultural Experiment Station and the United States Regional Soybean Laboratory, Division of Forage Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture, cooperating. Journal Paper No. J-1330 of the Iowa Agricultural Experiment Station. Project No. 856.

**Agent, Division of Forage Crops and Diseases; and Research Associate Professor of Farm Crops, Iowa Agricultural Experiment Station, respectively.

seed obtained from the plots damaged at the last two dates. No significant trends were observed on lodging in either year.

Chemical analyses were made only on the 1944 material. However, even though the data are for one year only, it is believed that they should be mentioned. As for protein content, no definite changes from that of the undamaged rows were noted. On the contrary, oil content and iodine number seemed to be affected considerably from damage at certain dates. Medium and heavy damage caused a substantial reduction in oil content when damage was inflicted during pod and bean formation. Damage at the earlier stages of growth, up to the time of flowering, had relatively no effect on oil content with light or medium damage. Heavy damage consistently reduced the oil content below the undamaged rows at all dates of damage except the last. On the last date of damage, in 1944, when about 25 percent of the leaves had turned yellow, no effect on oil content was found.

The iodine number of the oil was affected even more markedly than the oil content. All degrees of damage brought an increase in the iodine number of the oil, as compared to the undamaged samples, when the damage was inflicted at the fourth and fifth dates. The extent of increase in the iodine number varied directly with the severity of damage. Though these results from the chemical analyses are for one year only, the trends observed may be of definite concern to a processor who buys beans in an area which has received considerable hail damage.

To give an idea of the effect of the various dates and degrees of damage on total reduction in yield, and on plant height and maturity, the 1943 and 1944 results have been averaged. These are shown in Table II. Yield and plant height are expressed in percent of the undamaged rows, while maturity is expressed as days later or earlier than the check. The differences in the yield reduction for light and medium damage at dates 1 and 2 are not statistically significant.

The hail damage studies were made somewhat more comprehensive in 1945, with the addition of several new features. An attempt was made to remove accurately certain percentages of the leaves at several stages of growth. Percentages removed were 10, 25, 50, 75, and 100, with non-defoliated rows for comparison. In another phase of the work various percentages of the stand were removed at several stages of growth. It is hoped by these new phases of the study to gain some insight into the component elements of hail injury. The original methods of inflicting damage also were continued. The results from the 1945 studies will be made available at a later date.

Weather conditions and cultural care, especially weed control, are of paramount importance following hail injury during the early stages of growth. With proper weed control and a plentiful supply of moisture, soybeans not too badly damaged by simulated hail injury up until the time they were in blossom, came back and gave a fairly good yield. Simulated hail injury during pod formation was most damaging, and brought about substantial reductions in yield, poorer quality seed, and possibly a drop in oil content. Injury at the time when the beans were fully developed in the pods was dependent upon the number of pods removed.

TABLE II. Average yield and plant height in percent of check; also days later or earlier than check for three degrees of damage at five comparable dates. Hail Damage Experiment, Ames, Iowa, 1943 and 1944.

Date of Damage	Degree of Damage — Check (No damage)	Light	Medium	Heavy
	Yield			
1	100	88	92	82
2	100	92	95	73
3	100	84	84	64
4	100	61	54	30
5	100	77	73	62
	Plant Height			
1	100	93	93	89
2	100	91	88	73
3	100	90	81	67
4	100	99	97	92
5	100	99	99	96
	Maturity			
	Days later (+) or days earlier (−) than check			
1	0	0	+2	+7
2	0	+1	+2	+6
3	0	−1	+2	+6
4	0	−2	−2	−1
5	0	−2	−1	−2

—s b d—

Chinese Refugees Grow Soy Sprouts

Chinese famine refugees cull a living with the aid of United China Relief, member agency of the National War Fund, by growing soybean sprouts in earthenware pots placed outside their cave homes on the outskirts of Sian.

GROWERS

Cost of Growing

The cost of growing and combining soybeans has shown a tendency to rise since 1932, and yet the operating expenses on an acre of soybeans in 1944 was $1.00 less than on the same farms in Champaign and Piatt Counties, Ill., in 1930, reports R. H. Wilcox in *Illinois Farm Economics*, September and October 1945.

In 1944 on these farms 40 percent of the soybean crop was planted in rows. More time and power were required where beans were cultivated, but the 3¾ man hours, practically no horse hours, and 2 4/5 tractor hours for an acre of all the beans on these farms in 1944 are very low when compared with 12 man hours, 27 horse hours and 1½ tractor hours used to grow and harvest an acre of soybeans on the farms in this group that raised soybeans in 1924. Seventy-one percent of the farmers in the cost study owned their own combines.

The operating expenses for producing an acre of grain beans was $13.50. When land charges were added, the net cost of producing an acre of grain beans was $20.33. The yield per acre was 24.8 bushels, and the average cost per bushel was 81.8 cents.

Canadian Navy Adopts High Protein Bread

By JAMES L. DOIG

Canadian Representative A. E. Staley Mfg. Co., Montreal, P. Q.

NUTRITIOUS, palatable food plays an important part in the high morale of our Canadian Navy. Bread is the one staple food item in demand at every meal, and it must be good.

Using high percentages of soy flour to produce a high protein loaf, nutritious, digestible and with remarkable keeping qualities, has definitely solved the problem of bread for the Navy.

The interest of the Navy nutritionists in soy flour dates back to 1917, to the hectic days of unrestrained submarine warfare in the first great war, and provides an interesting little story.

Captured German submarines were found to be carrying concentrated emergency rations containing roughly 50 percent soy, in the form of a dry biscuit. They were not particularly palatable, but the physical condition of the men left little doubt of their nutritional value. Experiments were undertaken in Britain with the object of supplying our ships with a similar ration.

However, the war ended. Postwar disinterest in anything pertaining to war, the boom, disarmament, and the subsequent depression years interrupted all research. Hard tack and poor bread were the rule on most ships.

PRODUCED BY BRITAIN

But around 1924 a very palatable high fat soy flour named Soyolk was produced in Britain. The firm producing it sent over one of the best salesmen I have ever met. He succeeded in selling this new soy flour to practically every large baking unit between Halifax and Vancouver.

Unfortunately, the firm did a very poor job of following up these sales. Instructions for using the product were based on British practice and flours, and most bakeries ran into trouble.

One large concern, Moirs Limited of Halifax, where I happened to be demonstrating a new yeast grown in the sulphite liquor from the pulp mills, had a large quantity of Soyolk on hand, and we decided to offer a high protein loaf, fortified with soy flour, to the maritime trade.

The loaf carried 9 pounds of Soyolk to each bag of wheat flour, was named "Soyota." Although practically unadvertised, production soon reached high volume. The loaf had a slightly creamy colored crumb, good volume and a rich crisp brown crust, and when toasted, had a very appetizing odor reminiscent of butter. Altogether it proved a good selling item.

Lt. C. D. R. Hood of the Royal Canadian Naval Reserve, who at that time was one of Moirs executives, introduced the loaf to the Naval barracks at Halifax, and after tests, it was supplied to their kitchens as they had no bakery of their own.

When the present war broke out Naval interest in soy was renewed. After months of intensive research in collaboration with Lt. C. D. R. Campbell, chemist Calder of Clarks Food and Chas. E. Frossts Laboratory, we developed the present ration biscuit, which is part of the emergency ration kits carried by all Canadian Naval units.

This ration biscuit which carries over 50 percent soy, has already been described in the *Digest**. We are glad to say that with the termination of the war our agreement with the Naval authorities regarding the publishing of details of the biscuit is now ended. We will mail the formula free to any reputable manufacturer who will write us under his business letter head.

With this background proving the nutritional value of soy, Naval interest in using it became more pronounced. With the improvement in processing enabling larger percentages to be incorporated in breads without distinct crumb color changes, it was inevitable that its use would be encouraged in the service bakeries and kitchens.

However, food is a very important item in Naval morale. It was only after months of experimenting and concrete evidence that the soy loaf had nutritional value, digestibility, palatability, and eye appeal, that it was adopted as standard.

We have examined the loaf and it certainly fulfills all claims made for it. With the growing public interest in nutritional values progressive bakery owners, who are interested in maintaining and increasing the consumption of bread, should give the production of this high protein bread very serious consideration.

The general health and well being of this and future generations depends to a great extent on the production and consumption of more and better bread. We believe soy flour can help produce such a loaf.

—s b d—

*See "Life Raft Ration," by James L. Doig, in SOYBEAN DIGEST, March 1943.

"SOYOTA" — High Protein Bread

3 Hour Straight Dough. 1 Bag Batch.
Ingredients should go to mixer in the order given.

	lbs.-oz.	
Water	60 —)	Start mixer and run for 2 minutes.
Salt	2 —)	
Skimmed milk powder	1 8)	
Sugar	2 —)	
Malt flour	1 8)	
High fat soy flour	9 —)	
Wheat flour (1 bag)	98 —)	Add and continue mixing.
Yeast	1 12)	
Water	2 —)	Mix together and add.
Mineral salts (yeast food)	— 3)	
Shortening melted (vegetable)	3 —)	Add and continue mixing for 20 minutes.

Mixing times are based on slow speed mixer (28 r. p. m.).
Dough should come from mixer 82°F.
Punch and turn dough at 2 hours.
Let rest 45 minutes, punch and turn.
Let rest 15 minutes and divide.
Give short pan proof and bake out well.

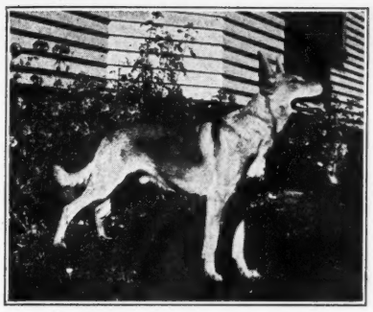
CAUTION: Water content is based on 2nd patent Canadian flour (quite strong) and may have to be altered to meet varying flour strength.

Shortening shipments for 1945 by 10 leading companies totaled 430,071,000 lbs. compared with 385,225,000 lbs. in 1944 and 510,444,000 lbs. in 1943, reports the Institute of Shortening Manufacturers.

—s b d—

UNIQUE TEST

Three multiwall paper shipping sacks full of flour recently went over Niagara Falls and one of them was pulled from the water still usable! "Red" Hill, Jr., well known Niagara Falls daredevil, conducted the unique test. The bags, of special heavy duty construction, were furnished by Bemis Bro. Bag Co. Hill recovered one of the bags still intact under the falls 7½ hours after it had been placed in the water above. He is shown here carrying one of the bags to the river. He and other members of his family have saved over 40 people from the tricky Niagara and have recovered over 300 bodies from the stream.



• This is the last of a series of eight special articles by well-known nutritional authorities on feeding livestock and poultry.

DOGS AND Fur Bearing Animals

By H. E. ROBINSON and R. E. GRAY
Members Soybean Research Council

THE POPULARITY of the dog during the war showed no decrease. It has been estimated that the dog population of the country is something over 15 million, including the registered, pedigreed dogs, as well as the non-registered and mixed breed dogs. The feeding of these dogs has been more of a problem than in the days of plentiful meat supply. The dog-owning public has become more and more conscious of the necessity for providing their pets with nutritionally balanced rations. They are relying upon commercially prepared dehydrated or dry-mixed dog foods, to a large extent, as the complete ration or as a basic supplement for their dogs. Approximately 250 to 275 million pounds of dehydrated and dry dog foods, representing about 200 different brands, are sold annually.

The rapid growth of the dog food industry during the last several years has resulted in equally rapid advances in the science of canine nutrition. More and more information is being obtained concerning the protein, mineral, and vitamin requirements of dogs. Numerous feeding experiments have been conducted on the dog and other small animals in determining the best combination of food materials which should be used in preparing a high quality, well-balanced dog food.

The protein constituents of a canine ration are probably the most important part of the ration. The biological value of single proteins has been studied to a large extent in the past. Present-day studies are revealing the supplementary relationships existing between various proteins or in various mixtures of proteins. Better methods for determining the amino acid composition of proteins are being studied. It is hoped that their relative amino acid composition will explain, at least in part, the supplementary effects noted in laboratory animal growth studies. Soybean protein has been found to exert a supplementary effect upon cereal proteins. Such a protein mixture is well utilized by the dog. This property of soybean products has undoubtedly been of tremendous benefit to dog food manufacturers in enabling them to produce well-balanced products during a time when there was not so much meat and meat products available for this use.

Soybean products, in addition to furnishing the high quality protein when properly

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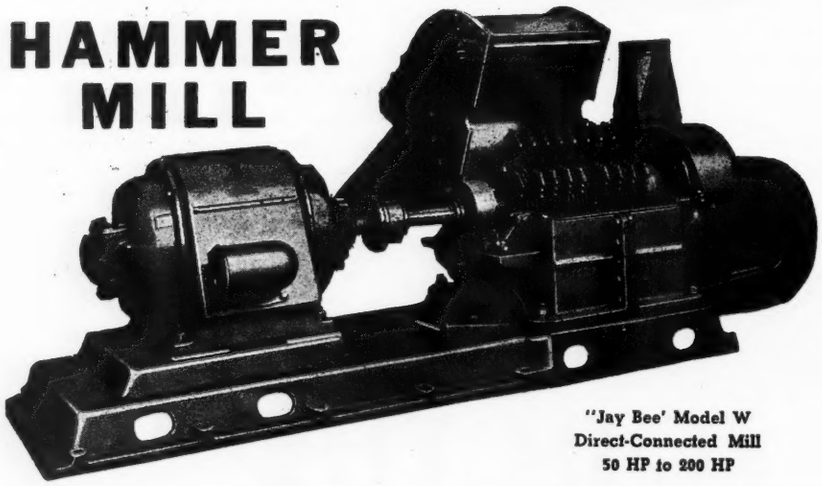
The Crop and Profit "Pepper Upper"

processed at controlled temperatures, have a higher mineral content than most of the cereals, and are an appreciable source of the B-complex vitamins. However, additional mineral and vitamin supplements should be used in dog foods containing soybean products as a major source of protein.

The fur farming industry presents a nutritional problem as difficult as any other animal feeding problem. It is very important that fur-bearing animals be maintained in the peak of health. The effects of nutritional defects are noticed almost immediately in the appearance and condition of the pelts. Not only must the ration be as nutritionally complete as possible, but also the cost must be reasonable, since the pelts are sold upon a highly competitive market.

The U. S. Fur Animal Experiment Station at Saratoga Springs, N. Y., has conducted feeding experiments with foxes, using a processed soybean product as a portion of the protein-rich materials in dry type rations. Excellent results were obtained. There are many reputable brands of dry commercial fox foods on the market that contain properly processed soybean products. These commercial fox foods have been found entirely satisfactory in biological tests and in practice on numerous fox farms.

"JAY BEE"
HAMMER MILL



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Direct-Connected Mill
50 HP to 200 HP

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The "JAY BEE" all steel hammer mill is practically indestructible. It is so tough and sturdy that it can take a lot, and give a lot.

An outstanding feature of the "JAY BEE" is that it can take maximum feeding day in and day out without stopping. The "JAY BEE" has run continuously 24 hours a day for 45 days, stopping only once to change hammers. That's grinding — the kind you need for big peace-time jobs.

The "JAY BEE" grinds everything grindable including linseed, cottonseed and peanut cake, fertilizer ingredients, tankage, all grains.

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BOOKS

FOOD FOR THE WORLD. Edited by Theodore W. Schultz. 352 pages. Price $3.75. University of Chicago Press.

Agriculture has a 2-year breathing spell, as provided by the Steagall Act, in which to get ready for what may be ahead. If you think the farm problem is simple, read this book.

As there are 22 contributors, many differing viewpoints are presented. But the composite picture that emerges is not a bright one so far as U. S. farming is concerned.

Nub of the difficulty seems to be that the capacity of our farms to produce is rapidly outrunning our capacity to consume.

The authors hold out no rosy hopes for world trade as a way out. The only solution with merit appears to lie in a dynamic expansion of industry to absorb both surplus farm population and products.

Various forms of governmental boondoggling to push up the purchasing power of lower income groups so they can afford an adequate diet are discussed. These things may have a limited value but no longer much glamor.

Concerning the long view on soybeans, one of the book's authors, W. W. Wilcox, University of Wisconsin economist, cuts through all the debate on soy's future during the past few months to state: "Our protein supply is STILL TOO SMALL in relation to our carbohydrates in animal feeding . . . We could get a better balance by increasing production of the high-protein feeds rather than our high-carbohydrate feeds. . . .

"Downward adjustment in soybean production in the U. S. is apt to be moderate. . . Because of the high value of the protein meal for livestock feed on the more level lands of the Cornbelt soybeans will continue to have a higher value than oats as a cash crop, even though oil prices go to extremely low levels."

W. W. WILCOX
"Protein supply too small"

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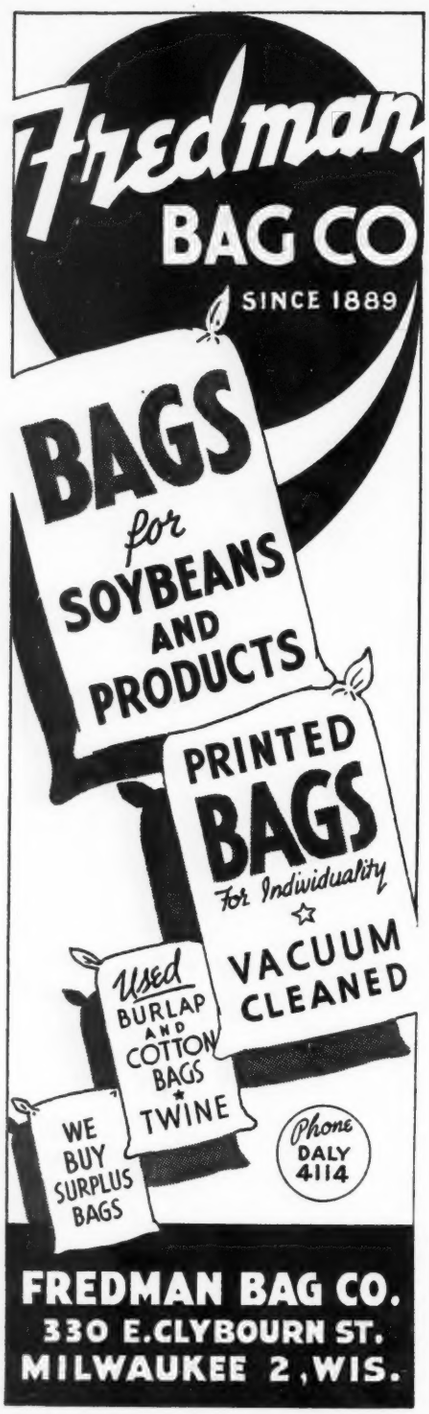

FINAL USDA REPORT

Crop 191.7 Million Bushels

The 1945 production of 191,722,000 bushels of soybeans is the second largest of record, being exceeded only by the 193 million bushel crop of 1943, according to the USDA crop reporting board. This year's crop is less than 1 percent above the revised 1944 production of 190,406,000 bushels, but is almost 2¼ times as large as the 10-year average of about 87 million bushels.

Yields per acre harvested for beans were above average in all areas except in the heavy producing North Central States. Even here yields were above the 10-year average except in Illinois and Ohio. However, as such a large proportion of the total acreage for beans is grown in these states and especially in Illinois, the area as a whole had a yield below-average. The U. S. yield of 17.6 bushels per acre just equals the 10-year average but is the lowest since 1940.

A wet spring in much of the principal soybean area caused a large proportion of the crop to be planted late. The continued wet weather also prevented some intended acreage from being planted. In some areas, however, especially in parts of Illinois, Missouri, and Arkansas, a considerable acreage was planted to soybeans which could not be planted to corn and other spring crops because of the lateness of the season. Many soybeans were planted after July 1, and in southern Illinois some were planted even after mid-July.

(Continued on page 34)

SOYBEANS (for beans)

	Acreage Harvested*			Yield Per Acre			Production		
	Average 1934-43	1944	1945	Average 1934-43	1944	1945	Average 1934-43	1944	1945
	— Thousand Acres —			—— Bushels ——			— Thousand Bushels —		
New York	9	14	4	14.6	14.0	14.0	134	196	56
New Jersey	†10	13	10	†14.7	10.0	19.0	†146	130	190
Pennsylvania	14	34	22	15.9	14.5	16.0	214	493	352
Ohio	491	1,321	1,147	19.3	16.5	17.5	9,889	21,796	20,072
Indiana	670	1,439	1,432	17.2	16.5	19.5	11,894	23,744	27,924
Illinois	1,920	3,470	3,800	20.1	21.0	19.5	39,010	72,870	74,100
Michigan	57	110	122	14.4	14.5	16.0	837	1,595	1,952
Wisconsin	22	49	41	14.1	15.0	15.5	319	735	636
Minnesota	72	263	455	14.4	16.5	15.0	993	4,340	6,825
Iowa	732	1,936	1,936	17.8	20.0	18.0	13,783	38,720	34,848
Missouri	186	606	730	11.0	17.5	13.0	2,397	10,605	9,490
North Dakota	.....	4	6	.....	12.0	12.0	.....	48	72
South Dakota	†10	12	17	†12.5	14.0	14.0	†128	168	238
Nebraska	†25	27	22	†11.9	16.0	16.5	†301	432	363
Kansas	57	221	274	8.8	15.0	10.0	605	3,315	2,740
Delaware	25	34	33	13.2	9.5	14.0	327	323	462
Maryland	18	35	32	13.2	13.0	15.0	229	455	480
Virginia	50	63	85	13.4	15.0	16.0	680	945	1,360
West Virginia	1	2	2	12.2	11.0	13.0	17	22	26
North Carolina	170	196	216	11.4	10.5	12.5	1,922	2,058	2,700
South Carolina	10	12	8	6.8	7.0	7.0	65	84	56
Georgia	13	13	8	6.2	6.0	7.5	77	78	60
Kentucky	31	60	61	11.6	13.0	14.0	375	780	854
Tennessee	30	72	69	8.7	14.5	14.0	302	1,044	966
Alabama	18	47	23	5.9	5.5	6.5	107	258	150
Mississippi	64	92	74	9.6	12.5	13.0	721	1,150	962
Arkansas	94	233	209	11.6	15.5	16.0	1,139	3,612	3,344
Louisiana	23	29	28	12.3	12.0	14.0	280	348	392
Oklahoma	3	6	7	6.6	8.0	7.5	22	48	52
Texas	7	2	.....	8.5	7.0	.....	58	14	.....
United States	4,812	10,415	10,873	17.6	18.3	17.6	86,732	190,406	191,722

*Equivalent solid acreage. (Acreage grown alone, with allowance for acreage grown with other crops.)
†Short-time average.

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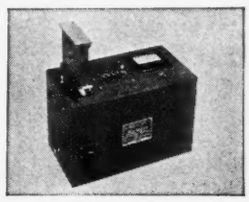

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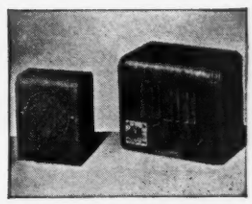
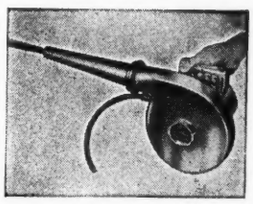
A one minute Moisture Tester. EASY TO USE . . . like tuning a radio. Operates on the radio frequency impedance principle, and is checked against official oven methods. Sold on 10-day trial basis. No money down. Immediate shipment. Standard Grain Unit, $275.00. Special Models, $325.00.



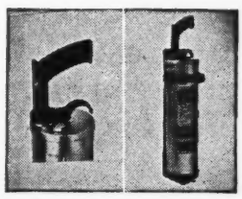
CALL-A-PHONE

Inter-office communication system. Saves time; speeds production. You can talk to one or up to five persons while they remain at their work. Personnel can contact you. Its value has been proven by its long list of satisfied users. Master station only $34.00. Sub-stations, each $12.50.



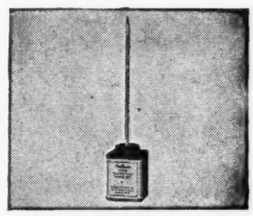
ELECTRIC BLOWER

Model 6A—Especially recommended for removing dry dust from machines and motors up to 20 h.p. Equipped with powerful ½ h.p. G.E. universal motor mounted on Norma ball bearings. No oiling. Easily converted into sprayer or industrial vacuum cleaner. Attachments extra. Price $54.45. Other models.



"PISTOL-GRIP"

Shoots about thirty feet. Turn handle a half turn either way, pump a few strokes and pull the trigger. Liquid contains no water, alkali, or acid, and will not freeze. A non-conductor of electricity, and will not harm motors or machinery. Price—1 Qt. $9.30, 1½ Qt. $11.30. Refill liquid $.95 Qt., $3.15 Gal.

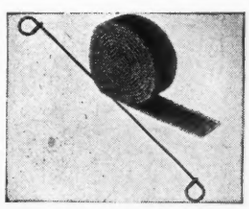


Temperature Taking Set

Developed for use with the Steinlite. Composed of a special amber thermometer and square tin container. The thermometer embodies a thick black spirit column. Degree figures and graduations in black can be read at a distance of five or six feet. Container holds a 100 gram sample. Set, $2.95.

BAG HOLDER

Opening at top is 15 inches long by 6½ inches wide. Big enough to shovel into without spilling over the side, because the bag is held firm and smooth. When not in use can be folded up and hung out of the way. Can be set up wherever you can drive two 10 penny nails. No. 378, price $3.00.



WIRE TIES

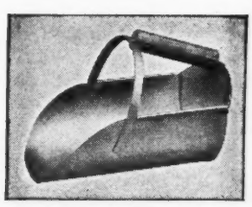
Bates Loop End Wire Ties in any gauge wire from 12 to 21, 2½" to 48". Other prices on request.

18 Ga.	16 Ga.
6" $0.75 M	$1.30 M
7" $0.85 M	$1.40 M

5,000 of one size to the roll. Minimum shipment 1,000. Bates Upset End Wire Ties in 16, 17, 18, 19 gauge wire, 3" to 10" in length.

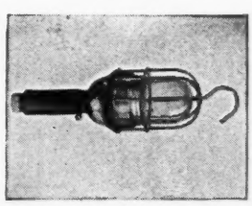
DUPOR RESPIRATOR

The No. 66 Dupor Respirator provides economical low cost protection where dust hazards prevail. Has two large felt filter pads 5/16 inch thick, securing double capacity and a clear entrance aperture of 7½ inches. Made of soft, high grade rubber and weighs only 4 ounces. Will fit any face and does not hinder any conversation. $1.65.



HANDY SCOOP

This handy scoop is made of steel. Handle, centered instead of at the end, distributes the weight evenly and makes the handling of materials easier and handier. Available in four different sizes, 8-inch length, $1.35; 10-inch length, $1.50; 12-inch length, $1.75; 14-inch length, $2.25. This scoop is in demand in the grain, seed, feed trades.



LAMP GUARD

Listed as standard by Underwriter's Laboratories. Every necessary precaution has been taken in the manufacture of this Guard to make it safe for use in the presence of grain dust or inflammable materials. No. 386 lamp for 50 watt bulb, $5.00. No. 308 Lamp for 100 watt bulb, $10.00. Prices do not include cable. Cable, per ft. $0.10.

OVER 400 ITEMS IN STOCK

Seedburo stocks over 400 different items of Equipment and Supplies. All are rigidly inspected and fully guaranteed. Government standards are strictly adhered to where available. The Seedburo 1945 Catalog and Reference book contains official directions for grading grain and other useful facts. If you do not have a copy, write today.

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RULES VIOLATIONS OF GRAIN STANDARDS ACT

Violation of the U. S. Grain Standards Act by misrepresentation of the grade of 44 carlots of soybeans shipped in interstate commerce has been found by Thomas J. Flavin, judicial officer, at Washington, D. C.

The soybeans were shipped by Toledo Grain Elevator, Toledo, Ohio, to Eastern Growers, Hagerstown, Md., during the months of July to October 1943, and were resold to Soya Corporation of America, according to the finding. Proceedings were instituted by the director of Office of Marketing Services, succeeded by Production and Marketing Administration.

According to the sustained charges the Toledo firm represented the soybeans on shipping documents as No. 2 yellow although some had been previously inspected and certified as No. 3. Others so labeled had not been officially inspected.

Toledo Grain Elevator contended that its contract with Eastern Grain Growers did not call for a specific grade and that its use of the term No. 2 yellow did not deceive the purchaser. The judicial officer found the terms of the contract immaterial to the fact that false representations were made and the act violated.

Eastern Grain Growers was found not to have violated the act in reselling the beans. "It relied upon the descriptions it received from Toledo Grain Elevator, not knowing they were incorrect . . . If its use of the descriptions constituted violations, they were unintentional and merely technical," Flavin ruled.

VETCH HELPS BEANS

The use of Hairy vetch on limed land in southeast Missouri can be expected to increase the yield of soybeans up to 10 bushels per acre, reports *Stockyards Journal*. That is the opinion of E. Moxley of Mississippi county based upon his five years experience in using vetch as a winter cover crop and soil builder.

Mr. Moxley believes that soybeans on his farm this year planted after vetch turned under last spring produced at least 10 bushels per acre more than other soybeans planted on similar soil types that were given equally as good cultivation. The beans on the Moxley farm this year averaged 35 bushels per acre.

—sbd—

COPRA IMPORTS

Latest reports indicate that by the middle of 1946 shipments of Philippine copra into the U. S. will reach a rate of around 25,000 tons a month and total 200,000 tons for the second half of 1946, states Charles E. Lund, chief of fats and oils unit, U. S. Department of Commerce, in December *Domestic Commerce*.

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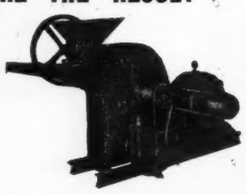
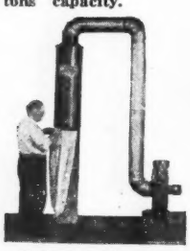
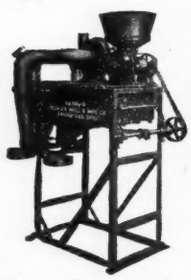


Model "L" Hammermill. A sturdy machine embodying many features. 40 to 60 H.P. Heavy duty Model "M" Hammermill, 50 to 100 H.P.



Kelly - Duplex Bag Cleaner. A time, money and bag saver . . . needed in every mill.



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Having equipped hundreds of feed mills and elevators throughout the country—our service to the grain handler and processor represents more than just an effort to sell a particular machine. Our engineers analyze your problem from every angle to help you operate more efficiently and at less cost, also, to enable you to realize a profit and render better service. You can depend on Kelly-Duplex equipment in every particular. If your mill or elevator equipment needs repairs or modernization, we will be glad to furnish suggestions and estimates without obligation.

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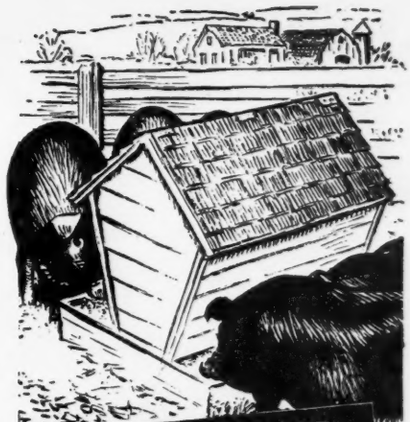

There's a Bemis Bag for every Soybean need

FROM the time soybeans are harvested until they are consumed either as human food or animal food, there's a need for Bemis Bags as containers.

From the field to the processing plant, it's Bemis Cotton or Burlap Bags. Cotton, Burlap and Multiwall Bags are also preferred for soybean meal and cake for animal food.

For soybean flour, flakes and grits, rapidly growing in demand in kitchens thoughout America, the proper containers, depending on the exact product, the shipping and handling conditions, etc., are Bemis Deltaseal Bags, Bemis Flexicartons, Bemis Cotton Bags, Bemis Multiwall Bags and Bemis Waterproof Bags. They range in capacity from 1 to 100 pounds.

Here are two further points of importance. Bemis' staff of packaging engineers is at your command. One of our representatives will gladly consult with you about your individual problems. And Bemis' twenty-three factories across the country provide your most versatile, most reliable source of supply.

Write to us today. No obligation.

Only **Bemis Deltaseal Bags** have the "Easy-Pour" Spout that's so popular with housewives. It's as simple as this: 1. Pull up flap. 2. Cut on dotted line. 3. Pour like this.

Bemis Flexicartons, domestic-size packages, are especially adaptable to counter and shelf display. A compact, attractive container that both grocers and housewives like.

Bemis Cotton Bags come in capacities up to 100 pounds. Bemis is a major Cotton Bag producer. Three Bemis mills make millions of yards of goods yearly for this purpose.

For field-to-mill service, many users prefer **Bemis Burlap Bags.** Particularly durable, they are consequently very economical. Bemis is one of America's largest Burlap importers.

Bemis Waterproof Bags are preferred where prevention of sifting, protection against dirt and vermin, or exceptional strength are necessary. Picture shows laminated-ply construction.

Bemis Multiwall Paper Bags, (available in pasted and sewn types, valved or open-mouth) are preferred for a wide range of processed products. Bemis has six multiwall bag plants.

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East Pepperell, Mass.

USDA MEN WHO HAVE CONTRIBUTED TO SOYBEAN DEVELOPMENT

★ ★ ★

J. L. CARTTER

Jackson L. Cartter, director of the Regional Soybean Laboratory of the U. S. Department of Agriculture at Urbana, Ill., started on his career in soybean research back in 1928 when a soybean laboratory was at Holgate, Ohio. A native of Brookfield, Mo., he got his B.S. degree at Montana State College in 1925, his M.S. at Iowa State College in 1927, and did further work in agronomy at the University of Wisconsin.

Cartter's investigations and his research direction cover a period of increasingly rapid expansion of the growing and utilization of this remarkable addition to American agriculture. In the beginning at Holgate he worked on the oil factor in the crop, its production and the development of high-oil varieties for the Cornbelt.

When the Department moved the laboratory from Ohio to Arlington Farm, Va., just across the Potomac from Washington, Cartter continued chemical studies of the soybean for the benefit of growers and the industry throughout the country.

In 1936 he was made head of the agronomic section of the U. S. Regional Soybean Industrial Products Laboratory, Urbana, Ill., where he supervised agronomic, physiologic, and genetic studies of the soybean in 12 North Central states. When the industrial sections of the laboratory were transferred to the Northern Regional Research Laboratory at Peoria, Ill., in 1942, the rest of the work remained at Urbana under the name U.S. Regional Soybean Laboratory, and Cartter was made director. At that time the research work on the crop was extended to the 12 Southern states and expanded to take in the problems of disease control.

The Laboratory and the cooperating states, under Cartter's leadership, have provided the industry with superior high-oil varieties including Chief, Patoka, Gibson, Earlyana, Boone, Richland, and the very recent Lincoln, a variety that "stands head and shoulders above other varieties," outyielding them and producing an oil of better quality in higher percentage. At the same time the soybean-producing areas have been expanded and many new facts have been found on how to handle the growing crop.

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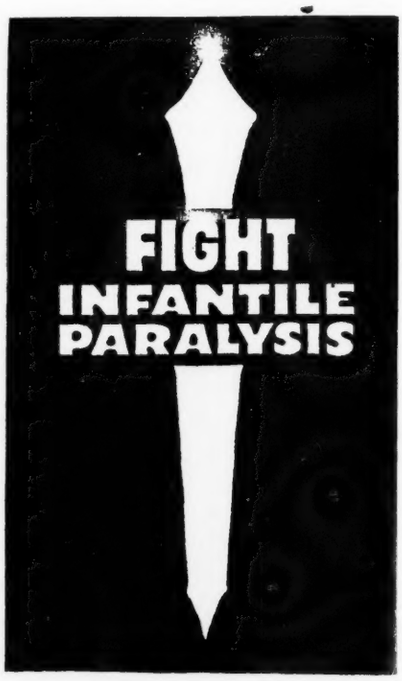
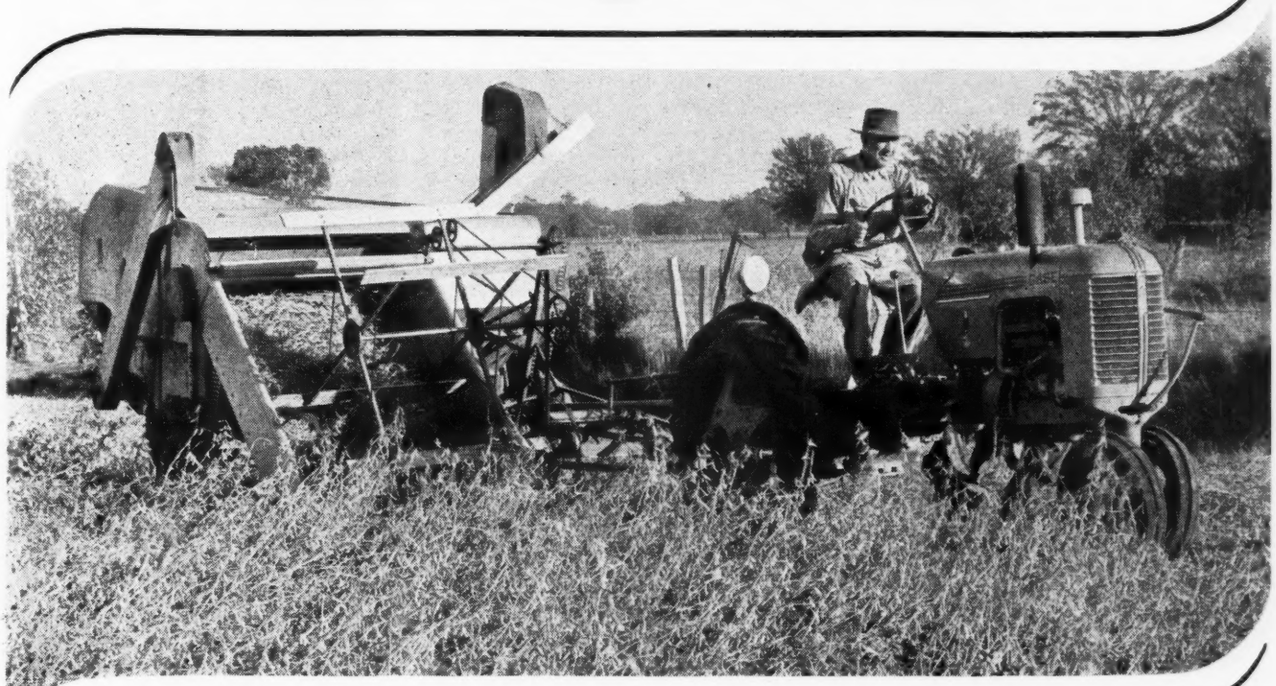


MARCH OF DIMES
JANUARY 14-31

Smooth Sailing in Soybeans



WHEN you have to watch the weather every day . . . sometimes every hour . . . for chances to harvest beans while they are fit to store, there's no time to waste with a slow-working machine, or . . . worse yet . . . by stoppages.

Getting the pods across the cutterbar is only the first skirmish in the battle of beans. Case combines are built to keep going and get things done even when green weeds or poorly matured pods make the going tough. The capacity that counts is extra threshing capacity at the cylinder and extra separating capacity on the racks. There's extra capacity, too, in Case Air-Lift cleaning.

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Besides the 4½-foot "F" shown above and the similar 6-foot "G," both with rub-bar cylinder, there is the 6-foot spike-tooth "A," the most capable combine built for mixed crops or other difficult threshing conditions. The 9-foot "M" and 12-foot "K" are built with rub-bar cylinder and auger-type header.

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GRITS and FLAKES...

FROM THE WORLD OF SOY

Lyle Palmer, Keota, Iowa, high school senior, has secured a 43.23 bushel per acre yield from a field of 1945 Lincolns. The certified seed came from the field with which his father, Doyle Palmer, won the Iowa state soybean yield contest in 1944. Lyle topped his dad's championship yield, which was 37.59 bushels, in winning this year's contest sponsored by the local chapter of Future Farmers of America.

* * * *

Appointment of Dorothy L. Heald as director of the home service department of A. E. Staley Mfg. Co., has been announced by A. E. Staley, Jr., president. Staley's is installing a completely new experimental kitchen and expanding its research laboratory at a cost of $250,000. The kitchen will be among the first of its kind to be built since the war. Miss Heald has a bachelor of science degree from Ohio State University. She was cafeteria manager for 3 years in a Chicago war plant.

* * * *

G. W. Agee of the Barrow-Agee Laboratories, Memphis, Tenn., described the history of the oil color committee of the American Oil Chemists' Society over the past 30 years in the December issue of OIL & SOAP.

* * * *

To meet the greatly expanded needs for packaging in Southern California, the Bemis Bro. Bag Co. is increasing its production of cotton, burlap and open-mesh bags by opening a factory in Los Angeles. The firm has leased a building just vacated by Consolidated Vultee Aircraft Corp. C. H. Dekker has been appointed manager of the new factory.

* * * *

Jack P. Grady, just released from the navy, has been appointed advertising and sales promotion manager for the Chase Bag Co., with headquarters at the firm's general offices in Chicago, R. N. Conners, general sales manager, announces. Lieutenant Grady was in uniform four and one-half years. Prior to that he was a member of Chase's sales promotion department.

* * * *

Faced with a serious protein shortage for their dairy herd after the Pearl Harbor disaster, the McBryde Sugar Co. has been growing soybeans under irrigation in Hawaii since 1942. The firm's experience with the crop is reported by Shigoe Uyeda in HAWAII FARM AND HOME *for July.*

* * * *

North Iowa Cooperative Processing Association, Manly, Iowa, plans a number of improvements on its plant in the near future, including a new screw-type conveyor and additions of new sections to the driers which will add 25 percent more capacity.

* * * *

Crushing facilities of the Archer-Daniels-Midland Co., Fredonia, Kans., are being doubled so that soybeans as well as flaxseed can be handled. Contract for the work has been let to the Fegles Construction Co., Minneapolis. It is expected that the new facilities, which will cost over $300,000, will be in operation in 6 months.

* * * *

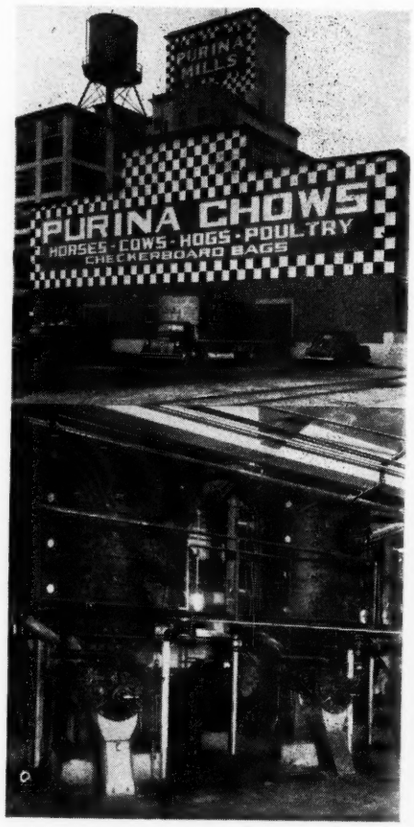
A Minneapolis feed broker says he is considering taking the sign off his door that says, "We buy and sell," and substituting therefor "We exchange," with a 3-ball sign overhead, reports NORTHWESTERN MILLER. *Current rate of exchange is five cars of corn for one of linseed, or three cars of soybean oil meal for one of fish meal.*

* * * *

Repeal of the 5-cent per pound Iowa tax on margarine was demanded by a resolution passed at the annual convention of the Iowa Retail Grocers' and Meat Dealers' Association. The resolution pointed out that more than 100 million pounds of soybeans are used annually in the manufacture of margarine and that the tax deprives soybean growers of a profitable market for their oil.

* * * *

Tom L. Jones has been appointed manager of the Memphis, Tenn., office of the Chase Bag Co., according to announcement of R. N. Conners, vice president and general sales manager of the firm in Chicago. Formerly located in Columbus, Ohio, Jones is well known in Ohio feed and produce circles.



PURINA MILLS' NEW KANSAS CITY UNIT

"Everything's up-to-date in Kansas City"—including the new soybean processing unit added to the K. C. plant of Purina Mills.

The new unit employs the latest cooker type expellers as manufactured by the French Oil Mill Machinery Co., and many other new processing machines designed by their engineering department.

This unit was started May 27 and has been in operation on a 24 hours per day, 7 days per week basis. Approximately 1,000 bushels of soybeans are handled through each expeller per day.

—sbd—

NO WOMAN VETERAN PROBLEM AT STALEY'S

Women veterans of Uncle Sam's armed forces are posing no problems for A. E. Staley Mfg. Co., Decatur, Ill., processor of soybean products.

Eleven of the 575 Staley employees who entered the service were women.

Four of them have been relased from service.

All four got their old jobs back, at their pre-enlistment rate of pay plus increases awarded during their absence to others holding similar job classifications.

All four married.

All four then quit their Staley jobs.

CARGILL DISTRIBUTES IOWA VARIETY POSTERS

An attractive three-color poster, "The Best Varieties of Soybeans for Iowa," is being distributed by Cargill, Inc., through the state's elevator operators and feed and seed dealers.

H. E. Schroeder, manager of Cargill's agricultural service department, prepared the material in cooperation with the Iowa Experiment Station.

The varieties recommended by the poster:

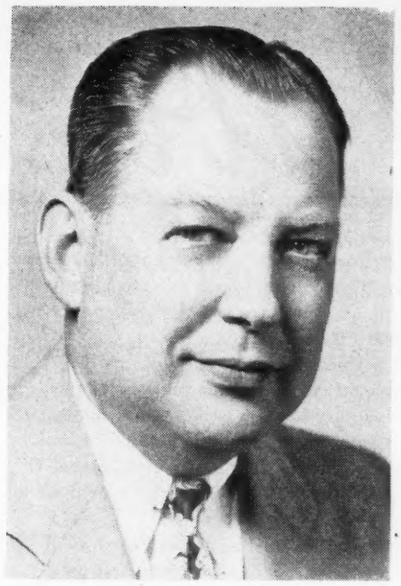
Northern Iowa — Richland, Earlyana and Habaro.
Central Iowa — Lincoln and Richland.
Southern Iowa — Lincoln.

—s b d—

FIND TARGET-SPOT ON SOYBEANS IN SOUTH

A leafspot of cowpea and soybean, caused by a new species of *Helminthosporium*, to which the common name of target-spot has been given, is reported by Lindsay S. Olive, Douglas C. Bain and C. L. Lefebvre in *Phytopathology*.

The disease was found causing a severe spotting of cowpea leaves in Louisiana in August 1944. Since then specimens of cowpeas as well as soybeans diseased by the same fungus have been received from North and South Carolina and Florida.



FERDINAND H. RHODEN

BAG MAN IN INDIA

Ferdinand H. Rhoden, head of burlap purchasing for the Chase Bag Co., left for Calcutta, India, by Pan-American Clipper the first week in January. He expects to spend a month in India talking with the mills and investigating current jute and burlap conditions. Mr. Rhoden is widely known throughout the burlap trade in this country for his work on the War Production Board as executor of Burlap Order M-47. He joined Chase Bag Co. in May 1944.

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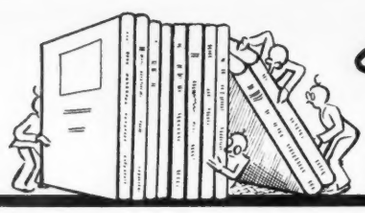

Publications

IRRIGATION OF ARABLE CROPS ON A RICE SOIL, by R. P. Bartholemew, L. C. Kapp and Martin Nelson. Agricultural Experiment Station, Fayetteville, Ark.

Land of the rice soil type becomes very dry most summers. Since rice farms are equipped with irrigation facilities a study of the practicability of irrigating was undertaken at the Rice Branch Experiment Station. Experiments on corn, cotton, soybeans and lespedeza are reported for the period 1931-1944.

Soybeans can withstand considerable drought without suffering great damage. When dry weather occurs the plants appear to enter a resting period which is broken when rains occur. However, when the drought is protracted, injury does occur and yields are greatly reduced.

Irrigation produced the largest yield increase in soybeans when the soil moisture content approached 15 percent or less. This was especially noticeable in 1943, a drouth year, when increased yields obtained by irrigating ranged from 8.4 bushels with Red Tanner variety to 17.3 with Arksoy.

An average increase of 2.7 bushels yield from irrigation was obtained during the years 1931-39. Increases occurred in every year except 1931 and 1933 when rainfall during July and August was apparently sufficient for the needs of the crop. Irrigation of soybeans where fertilizer was applied resulted in an average return of 3.3 bushels per acre during the same period.

EFFECT OF THE TEMPERATURE OF ROOT ENVIRONMENT ON GROWTH OF SOYBEAN PLANTS, by E. B. Early and J. L. Cartter, *Journal of American Society of Agronomy*, September 1945.

Root temperature as a factor in the growth of soybean plants has not been investigated as far as the writers could learn. However, studies on other species of plants indicate that temperature of the root environment plays an important role in plant development.

Earley and Cartter carried on five experiments during 1938-40. Results indicate that root temperatures in the temperature range of about 22° to 27°C. (71.6° to 80.6°F.) are most favorable for maximum production of top and roots under a wide variety of greenhouse conditions.

In general, the height of the soybean plants increased with increasing root temperature from 2° to about 17°C. (35.6° to 62.6° F.), remained uniform from that temperature to about 27°C. (80.6°F.), and decreased rapidly at 37°C. (98.6°F.).

SOYBEAN OIL MEAL INCREASED GAINS IN CATTLE WINTERING, GRAZING AND FATTENING TESTS, by W. E. Connell and R. C. Tom, *Colorado Farm Bulletin*, May-June 1945, Agricultural Experiment Station, Fort Collins, Colo.

The second year of an experiment in which steers were wintered in drylot, grazed during the summer, and fattened out in drylot the following winter in eastern Colorado, was concluded May 25, 1945.

Four lots of steer calves were wintered comparing cane silage with cane fodder and testing the value of adding soybean oil meal to these roughages.

One ton of soybean oil meal replaced about 6½ tons of cane fodder and about

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18½ tons of cane silage in these wintering rations.

Soybean oil meal stimulated the appetite of the calves, causing them to eat more of both roughages in addition to the oil meal, with a consequent increase in gains. One pound of soybean oil meal per steer daily fed with cane silage returned gains worth $8.54 at the end of the wintering period for $3.25 spent on additional feed. By the end of the grazing period the spread in gains had narrowed until its value hardly covered this extra feed cost. But during the fattening period the spread in gains widened again and the gain value was greater than the extra feed cost.

The same amount of soybean oil meal when fed with cane fodder caused an increased feed cost of $3.87 and brought an added gain worth $7.13 at the end of the wintering period. By the end of the grazing period this value was less than the added cost, but during the fattening period there was a spread in gains.

THIAMIN CONTENT OF JAPANESE SOYBEAN PRODUCTS, by Carey D. Miller, nutrition department Hawaii Agricultural Experiment Station. *Journal of the American Dietetic Association*, July-August 1945.

In making soybean curd from soybeans, Oriental people have evolved a method of producing a food of relatively high protein content with little carbohydrate and no crude fiber.

The paper summarizes a study of the thiamin content of whole soybeans and a number of soybean products including soybean milk (tonyu), soybean curd residue (kirazu), soybean curd (tofu), water drained from the tofu, fried soybean curd (aburage) and fermented rice and soybeans (miso).

EFFECT OF HEATING UNDER VARIOUS CONDITIONS, AND OF SPROUTING ON NUTRITIVE VALUE OF SOYBEAN OIL MEALS AND SOYBEANS, by J. Philip Mattingly and H. R. Bird, *Poultry Science*, July 1945.

In these experiments with chicks and white rats certain variables in connection with the production of soybean oil meal, such as pH, moisture content and oil content of the meal at the time of heating, were tested.

When sprouted soybeans were fed to chicks as the major source of protein in a practical ration, growth was little if any better than when unsprouted raw soybeans were fed.

When fed to rats, sprouted soybeans supported much better growth than did unsprouted soybeans.

PROCESSED SOYA BEAN IN BALANCING INDIAN DIETS, D. K. Chatterjee, *Science and Culture*, April and May 1945.

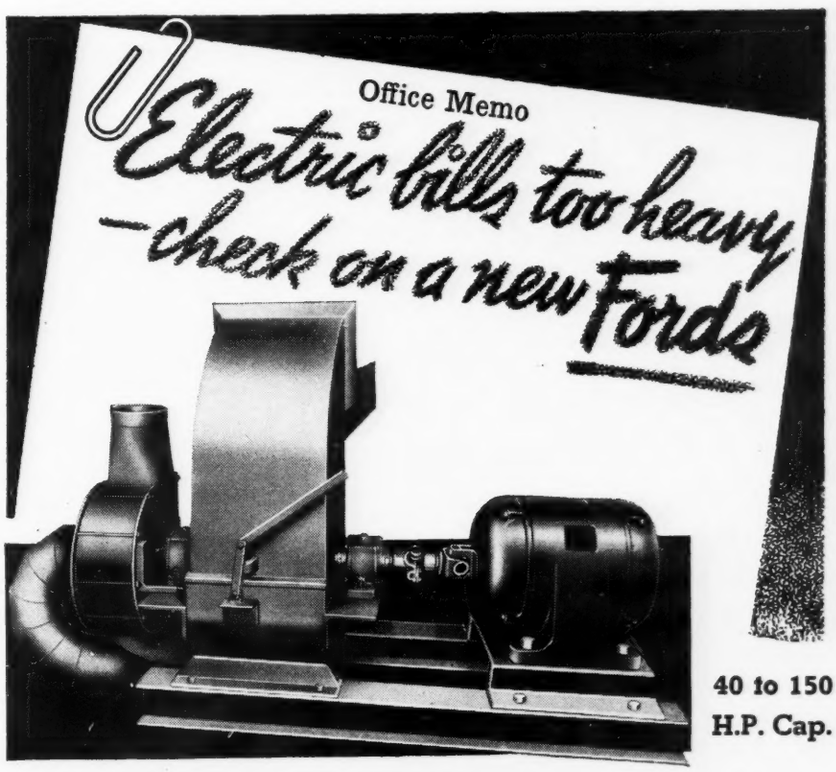
Chatterjee of Calcutta describes his experiments in processing the mammoth yellow large seeded variety grown in India to improve its digestibility.

This writer disagrees with other authorities who hold vegetable proteins to be generally inferior to animal proteins in biological value. He has found that most of the vegetable proteins under his observations had sufficient quantities of essential amino acids. He believes that the indigestible nature of soya protein is due to structural peculiarities in the linkage of its amino acids, and to the presence of a strong cellulose envelope which does not allow the embedded protein to be acted upon by the digestive fluid.

Proper processing improves digestibility to a great extent and renders the soybean most suitable for balancing the poor Indian diet, Chatterjee says.

It is generally recognized that many of the troubles of the people of India stem from bad diet. Indians are traditionally vegetarians, partly because they can not afford to be anything else, partly due to religious teachings which are against the present scientific trend.

Into this situation Chatterjee is inclined to introduce the soybean as the "missing link." While it is of vegetable origin it possesses most of the favorable properties of an animal diet.



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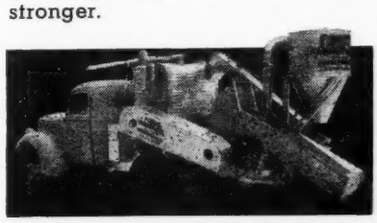

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WASHINGTON Digest

By PORTER M. HEDGE
Washington Correspondent for
The Soybean Digest

Protein Set-Aside A protein meal set-aside order was in the making as *The Digest* went to press.

The order being considered, it was reported, is along the lines of the one proposed a month and a half ago by Walter Berger, head of Production & Marketing Administration's feed management section.

It would limit the sale of protein ingredients and the use of proteins in mixed feeds to the same monthly amounts as a year ago. The remainder would be distributed by government direction into shortage areas. West Coast has been particularly loud in its clamor for more protein feed.

Feed officials maintain that the proposal for a set-aside has received increased support from many elements of the industry in the last few weeks.

They say protests have mounted from both handlers and mixers that they have been unable to supply regular customers, and want something done about it.

They claim the maldistribution is caused by the scramble of some manufacturers for new business, the large demand for protein feeds everywhere, and fact that many oilseed suppliers, normally not engaged in the feed business, sell to crushers only with the understanding that they will be supplied with protein ingredients in return.

Protein meal output during October and November ran a little ahead of a year ago. But for the season as a whole total supplies will fall short of last year.

The protein situation is but a part of the Administration's feed problem, growing steadily more critical. Officials close to the situation report that the supply of carbohydrate feeds is even shorter than protein feeds.

Until the new grain crops come on, officials are now predicting a feed shortage as bad or worse than it was two years ago when the government stepped in with measures to control both feed distribution and livestock feeding.

For the next six months, officials claim it will be risky to base feeding operations on a gamble that feed can be obtained when needed.

Successor to Jasspon? Colonel Omer W. Herrmann, recently named assistant director of the fats and oils branch of Production and Marketing Administration, is considered a likely choice as successor to W. A. Jasspon, the present director, who wants to leave the Department.

Col. Herrmann was chief of the food and agriculture section of SHEAF on General Eisenhower's staff in Europe in charge of civilian feeding and agricultural rehabilitation for Northwest Europe. Before entering the Army, he worked in cotton and vegetable oil seed processing research for the Farm Credit Administration.

Remove Subsidy In line with Administration policy on subsidy removal, the subsidy on bulk shortening has been terminated as of the end of 1945.

The subsidy amounted to 0.4 cents a pound on vegetable oil in standard shortening, and 0.2 cents a pound on hydrogenated vegetable shortening. It cost about a million dollars a year.

Ceiling prices, however, still remain in effect.

Acreage Outlook Up to press time, Secretary of Agriculture Anderson had taken no further action on the support price for soybeans produced in 1946. Anderson has tentatively settled on a support of $1.80 a bushel.

Total 1946-47 requirements for edible fats and oils are estimated at 5,665 million pounds in USDA calculations used as the basis for recommending 1946 acreage goals to the states.

Total requirements, excluding butter, are broken down this way:

For domestic consumption, 4,835 million pounds.

For export, 550 million.

For non-food uses, foots and loss, 280 million.

These requirements are based on U. S. population, including the military, of 142.2 million persons, and a national income of from 130 to 140 billion dollars.

USDA estimates soybean oil requirements for 1946-47 at 1,300 million pounds, equal to 145 million bushels of soybeans for crushing and export. Other needs for soybeans are figured to bring the total soybean production requirement to around 190 million bushels.

The recommended 1946 soybean production goal of 9½ million acres, taking average yields of 18.6 bushels per acre, would produce about 177 million bushels of soybeans, about 12 million bushels short of estimated requirements.

Allowing 45 million bushels for seed, feed, full-fat flour, other food uses and loss, the remaining 132 million bushels would yield about 1,190 million pounds of soybean oil. This is approximately 110 million pounds

short of the estimated requirements.

The 110 million pound deficit between estimated production from the goal and estimated requirements isn't explained in the goals report, though the answer is to be found in lower price support.

The following table gives *suggested* state soybean acreage goals for 1946:

State	— 1946 Goal — Production 1,000 bu.	Acres 1,000	1945 Acreage 1,000	% Goal is of 1945
New York	130	9	6	150.0
New Jersey	160	11	10	110.0
Pennsylvania	480	30	20	150.0
Illinois	67,725	3,150	3,564	88.4
Indiana	23,400	1,300	1,432	90.8
Iowa	34,125	1,750	1,905	91.9
Michigan	1,500	100	110	90.9
Minnesota	4,500	300	380	78.9
Missouri	9,750	650	718	90.5
Nebraska	350	25	23	108.7
Ohio	22,000	1,100	1,189	92.5
South Dakota	195	15	16	93.8
Wisconsin	620	40	41	97.6
Delaware	325	25	28	89.3
Maryland	325	25	26	96.2
Virginia	980	70	102	68.6
W. Virginia	25	2	2	100.0
N. Carolina	1,760	160	174	92.0
Kentucky	715	55	65	84.6
Tennessee	980	70	77	90.9
Alabama	150	25	38	65.8
Arkansas	2,925	225	250	90.0
Georgia	84	13	12	108.3
Louisiana	312	25	24	104.2
Mississippi	840	70	87	80.5
Oklahoma	35	5	5	100.0
S. Carolina	56	8	8	100.0
Texas	16	2	2	100.0
Kansas	2,585	235	275	85.5
North Dakota	60	5	7	71.4
U. S. TOTAL	177,108	9,500	10,596	89.7

—s b d—

RULES SOYA BUTTER IS OLEOMARGARINE

Denial of a petition for a permanent injunction sought by Butler Food Products, Cedar Lake, Mich., to restrain the Bureau of Internal Revenue from assessing the Federal margarine tax against soya butter, has resulted in stopping its manufacture, it is reported.

Federal Judge Edward J. Moinet, Detroit, ruled in December that soya butter, an all vegetable product made of soybean oil and other soya derivatives, is oleomargarine as defined by the internal revenue code.

After the U. S. Food and Drug Administration held that soya butter was not margarine and TO SO LABEL IT WOULD BE SUBJECT TO PENALTIES, Howard O. Butler, operator of the firm, had been selling the product in Michigan under restraining orders preventing collection of the Federal tax and enforcement of the Michigan margarine laws against soya butter pending clarification of the conflicting governmental rulings.

Frederick G. Rita, special assistant district attorney, estimates that $150,000 in back margarine taxes are collectible from the Cedar Lake firm.

Last summer the board of directors of the American Soybean Association went on record in support of a bill in congress to define soya butter as being distinct from margarine.

PEANUTS

(Continued from page 13)

4. Comparisons between various peanut types for hay and nut production.

5. Fertilization, to find methods of improving yields.

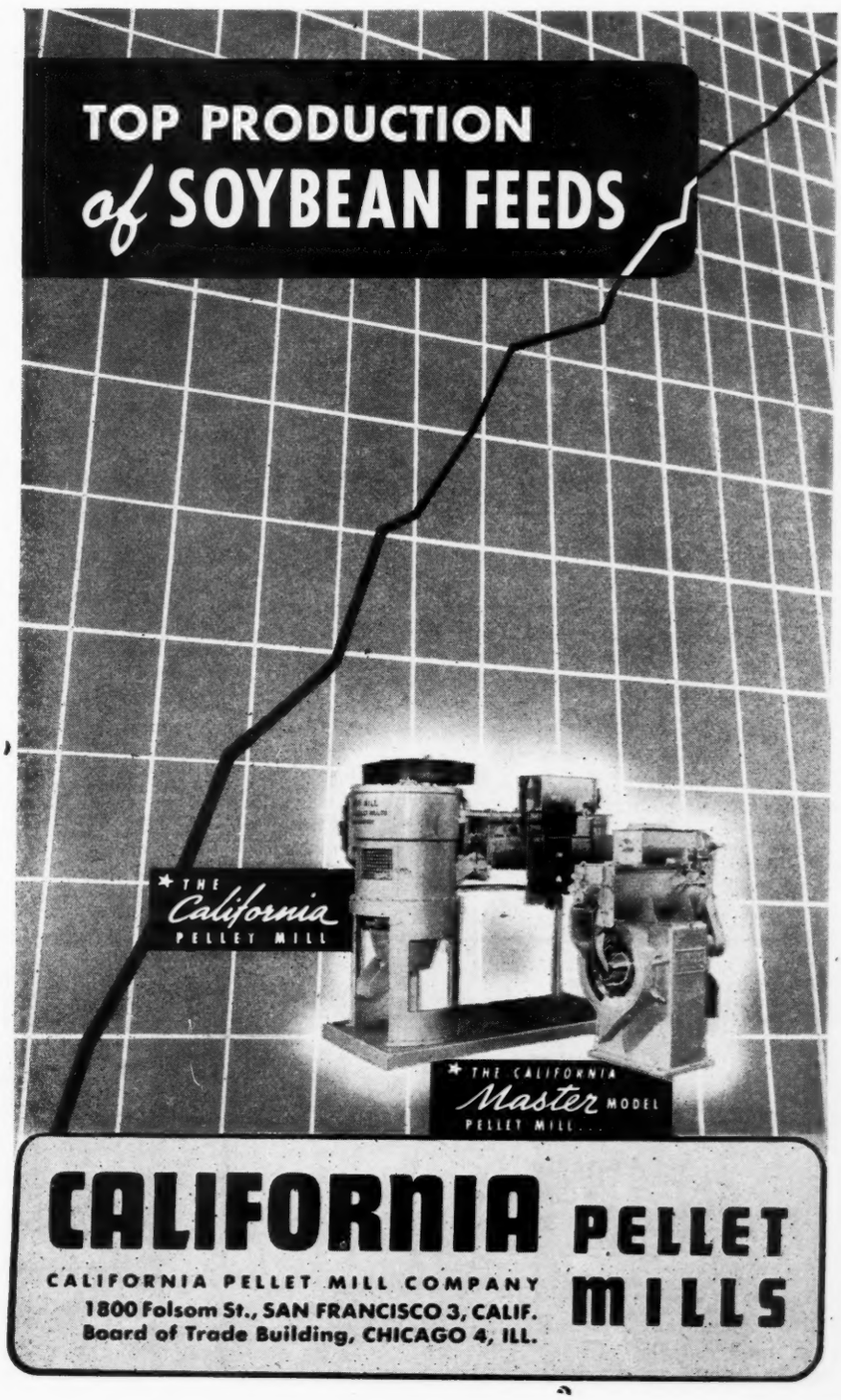
6. Utilization of peanuts and their by-products.

Experiment stations continue to seek to improve seed stock, soil conditions, fertilization and preparation of farmers' stocks, and marketing.

World War II made heavy demands of the industry. Aware of the nutritional values of the peanut, the government allocated half of the entire 1944 output for the United States armed forces.

Again hulls have been put to use in the making of dynamite, and peanut oil has gone into many phases of warfare — explosives, pharmaceuticals, etc. In addition, the peanut, in one form or another, was a mainstay in the diets of fighting men — ground, air and sea forces.

Despite this country's tremendous production of peanuts, it ranks only third among all peanut-producing nations. India is at the top of the list, China is second.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of SOYBEAN FEEDS
THE California PELLET MILL
THE CALIFORNIA Master MODEL PELLET MILL
CALIFORNIA PELLET MILLS
CALIFORNIA PELLET MILL COMPANY
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Board of Trade Building, CHICAGO 4, ILL.

--- MARKET STREET ---

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here. Rate: 5c per word per issue. Minimum insertion $1.00.

CERTIFIED LINCOLN soybean seed, also Earlyana for sale. Special price in truck or carload lots. Bert L. Benskin, Laurel, Iowa.

FOR SALE — Certified Lincoln soybean seed. Foundation stock. Varietal mixture .04%. Order early. Edward F. Lehman, Remington, Ind.

WANTED — Two to four late model Duo or Super Duo Anderson Expellers. Must be in good condition. Address reply to CO, Soybean Digest, Hudson, Iowa.

FOR SALE — We have a limited amount of Hokkaido and Funk's Delicious seed, high germination guaranteed. These two varieties are tops in the edible family. For prices write the International Nutrition Laboratory, Mt. Vernon, Ohio.

FOR SALE — Certified Lincoln and Illini soybean seed, $3.00 per bu. in bags. Certified Tama oats $1.25 per bu. Special price on large lots. J. Harold Canterbury, Cantrall, Ill.

WANTED — Anderson Super Duo expeller with fourteen inch conditioner or thirty-six inch cooker. IM, Soybean Digest, Hudson, Iowa.

Seed Directory

A charge of $3.00 will be made to subscribers for listing in the February, March and April issues. Quantity for sale and variety are included.

ILLINOIS

Arcola — Geo. L. Pfeifer, 5,000 bu. certified Lincoln.

Atwood — John H. Livengood, Sr., 300 bu. certified Dunfield; 700 bu. Lincoln, certification can be completed after cleaning.

Bowen — Roy A. Morton & Sons, Lincoln, Illini, and Earlyana, all certified.

Cantrall — J. Harold Canterbury, 2,000 bu. certified Lincoln; 600 bu. certified Illini.

Laura — Hubert L. Oakes, 1,000 bu. certified Lincoln, purity 99.9%, germination 97%; 600 bu. uncertified Lincoln.

Lomax — John Peasley, 2,500 bu. certified Lincoln.

Nokomis — E. E. Rademacher, Box 184, 1,500 bu. certified Lincoln; 350 bu. uncertified Illinois (brown hay).

Ottawa — Willis Thorsen, Rt. 2, 2,100 bushels certified Lincoln, varietal purity 99.9, germination 97%.

Peoria — W. O. Pendarvis, 1007 Central Nat'l Bank Bldg., 600 bu. certified Lincoln.

Peoria — W. G. Kelly, Kelly Seed Co., 116-18 S. Wash. St., 11,000 bu. certified Lincoln; 800 bu. uncertified Lincoln; 1,500 bu. uncertified Illini; 1,500 bu. uncertified Dunfield; 1,200 bu. uncertified Chief; 2,800 bu. uncertified Richland; 800 bu. uncertified Mt. Carmel; 6,500 bu. uncertified Patoka.

Princeton — Princeton Farms, 1,000 bu. certified Lincoln; 2,000 bu. certified Gibson; 2,000 bu. certified Patoka.

Roseville — Pratt Seed Farms, Dale Watson, Mgr., 5,000 bu. certified Lincoln; 1,500 bu. uncertified Lincoln.

Savoy — R. J. Hixson, P.O. Box 26, 1,500 bu. Lincoln grown from own certified seed, will furnish certification if wanted.

Stonington — James Meridith, 1,500 bu. certified Lincoln.

Sullivan — Landers Seed Co., 1,500 bu. certified Lincoln; 1,500 bu. uncertified Lincoln; could also supply several thousand bu. uncertified Lincoln from certified stock in hands of farmers in community.

Tuscola — A. N. Cabalek, 800 bu. certified Illini; 1,400 bu. certified Tama; 300 bu. certified Lincoln.

INDIANA

Ft. Wayne — O. L. Bryant & Son, Rt. 4, 4,000 bu. certified Lincoln; 800 bu. certified Earlyana.

Greenfield — Lewis C. Hardin, Rt. 1, 2,000 bu. certified Lincoln.

Huntington — D. E. Whinery, Rt. 6, 800 bu. Indiana certified Lincoln.

Huntington — Allan Anson, Rt. 2, 1,500 bu. certified Lincoln.

McCordsville — Maurice Woodward, 1,500 bu. certified Lincoln.

Muncie — O. C. Russell & Sons, Rt. 1, 1,000 bu. certified Lincoln, foundation seed; 500 bu. certified Kingwa foundation seed.

Remington — Edward F. Lehman, certified Lincoln foundation stock.

Remington — Glenn L. Kinsell, 5,000 bu. certified Lincoln; 3,000 bu. certified Earlyana; 500 bu. certified Richland.

Valparaiso — L. K. Wyckoff, Rt. 3, 2,500 bu. certified Lincoln; 1,200 bu. certified Lincoln foundation; 2,500 bu. certified Earlyana; 1,000 bu. certified Earlyana foundation; 500 bu. certified Richland.

Waveland — Harry N. Moser, 1,000 bu. certified Lincoln; 400 bu. certified Earlyana.

Windfall — Mitchell Farms, 2,000 bu. certified Earlyana; 4,000 bu. certified Lincoln.

IOWA

Castana — Fred W. Hawthorn, 2,000 bu. certified Lincoln.

Estherville — A. B. Rosenberger, 250 bu. certified Earlyana; 200 bu. Richland from certified seed; 150 bu. uncertified Habaro.

Laurel — Bert L. Benskin, certified Lincoln, Earlyana.

Marshalltown — Kenneth R. Lynk, [illegible] 4,500 bu. certified Lincoln, [illegible] bu. [illegible] from certified seed.

Traer — Roy Kern, Lin Richland, certified or uncer and Vickland oats.

MINNESO

Hector — Kenneth C. But Wisconsin Mandarin; 100 b Mandarin.

Cannon Falls — Geo. F. registered Habaro.

Montevideo — John W. Evans, Rt. 1 [illegible] Habaro; 200 bu. Pridesoy; 400 bu. [illegible] Ottawa Mandarin.

OHIO

Van Wert — Marsh Foundation Farms, Box 150, 5,000 bu. Ohio certified Lincoln; 5,000 bu. uncertified Lincoln.

—s b d—

1945 CROP REPORT

(Continued from page 20)

The growing season was favorable and the crop made rapid and vigorous growth but in some areas fields became exceedingly weedy. This weediness, coupled with drought conditions in August, especially in Ohio, materially reduced yields. Pods were small and poorly filled. Some of the late planted crop in Illinois, Iowa, and Nebraska was damaged by frosts, but considering the lateness of planting the crop, loss from frosts was surprisingly light. The harvesting season was delayed in the North Central States by excessive rains in late September and early October, but harvesting made good progress later and was nearly completed by December 1 except in scattered localities.

The acreage of soybeans grown alone for all purposes this year was practically the same as in 1944, the increase in the North Central area offsetting declines in all other producing areas.

Commodity Products Company

-- Jobbers --

Specializing in the Distribution of Proteins —

• Soybean

• Cottonseed

• Peanut

Ft. Worth Club Bldg. **Ft. Worth, Texas**

Phones: 2-6353, 2-6354 **Western Union**

GUILLORY SALES CO.

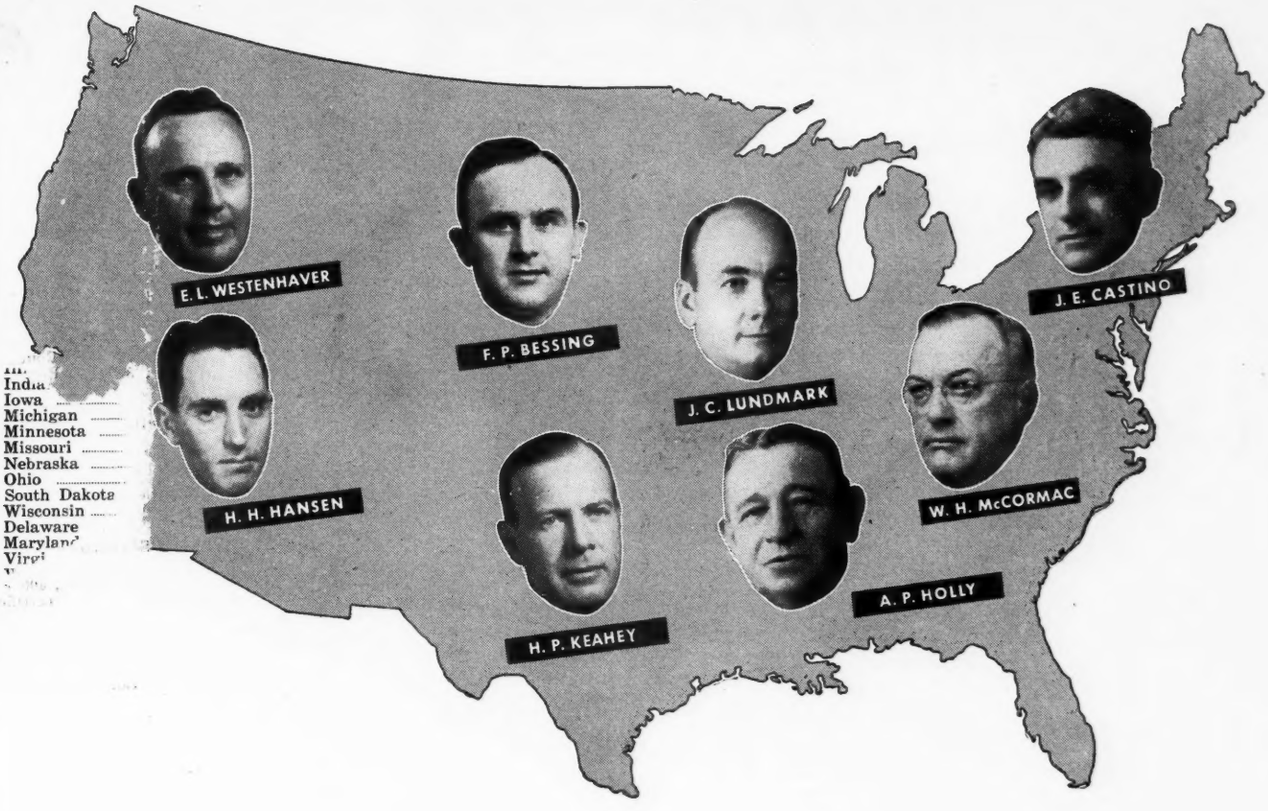
BROKERS

OIL and MEAL

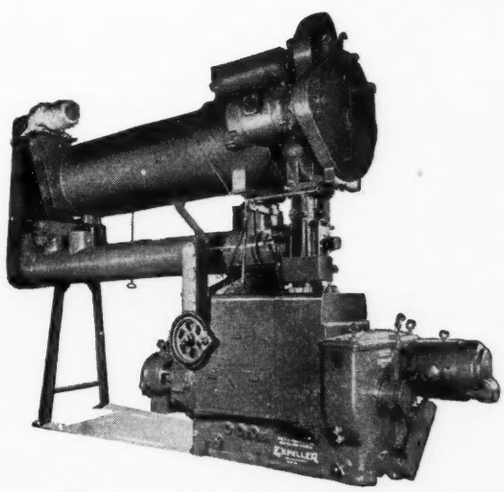
SOYBEAN and COTTONSEED

Cotton Exchange Bldg. **Memphis 3, Tenn.**

Phones L. D. 451 - 452



Nation-wide engineering service by ANDERSON



The latest, highest capacity Expeller—Anderson's Twin-Motor Super Duo. Greater economy, maximum yield.

These men are the Anderson Oil Mill Equipment Engineers who cover the nation. Each one of them is well qualified and willing to help you on your pressing problems. If you contemplate a change of layout, a revamp of equipment or are thinking about increased capacity—you may benefit from their knowledge and experience. Drop a line to Anderson asking for this engineering service—you'll get prompt, personal attention.

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Only ANDERSON makes EXPELLERS

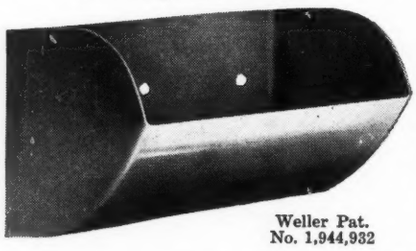
. . . And We Do Mean

Super Capacity

The elevator bucket with the Logarithmic Curve scoops up a super **capacity load** in elevator boot . . . then elevates this **super capacity** load up, up, up over the head pulley and empties it **clean as a whistle.** The

CALUMET SUPER CAPACITY ELEVATOR CUP

maintains its efficiency. Records prove very conclusively that more bushels are **actually elevated.**



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GRAIN-SOYBEANS

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In The MARKETS

SOYBEAN SUPPLIES FOR 1945-46 BELOW LAST SEASON'S RECORD DISAPPEARANCE

Supplies of soybeans for 1945-46 are expected to be about one million bushels less than disappearance during 1944-45 as a result of a much smaller carryover and a smaller crop. Disappearance of soybeans during the 1944-45 season was 4 percent above the record of the previous season.

Disappearance of soybeans in 1944-45, was the largest on record amounting to 199,355,000 bushels compared with 191,362,000 in 1943-44 and 180,612,000 bushels in 1942-43. Crushings of soybeans for oil, as reported by the Bureau of the Census, totaled 152,772,000 bushels in the 1944-45 season ending with September. This is nearly 10 million bushels more than for the previous season and nearly 20 million bushels more than in 1942-43. Soybeans crushed for flour and grits in 1944-45 amounted to 2,683,000 bushels or less than half that for 1943-44. During the July-September quarter crushings of soybeans for flour and grits increased considerably amounting to 1,060,000 bushels compared with 527,000 in the April-June quarter and 836,000 bushels in the July-September quarter of the previous season.

Exports of soybeans continued heavy in the last quarter bringing the total for the season to 5,057,335 bushels. This compares with 934,486 bushels exported in 1943-44 and 904,047 bushels exported in 1942-43. The following countries received the bulk of the exports last season: France 2,335,537 bushels; Netherlands 602,868; Belgium 665,216; Norway 468,003; Great Britain 425,909; and Greece 246,931 bushels. Imports of soybeans amounted to only 4,012 bushels during 1944-45.

Urgent demand for soybeans for domestic use and for export have advanced prices to the highest level since 1928. Prices received by farmers for soybeans during the 1944-45 season averaged $2.06 per bushel compared with $1.82 in 1943-44, $1.61 in 1942-43, and $1.12 the 10-year (1934-43) average. Farm prices in November averaged $2.09 compared with $2.06 in October and $2.05 in November 1944.

● STOCKS OF SOYBEANS. Less than 8 million bushels of all soybeans remaining from the crop of 1944, or earlier, were stored in all positions on and off farms on October 1, 1945, according to the quarterly summary of the Crop Reporting Board of the U. S. Department of Agriculture. Of this total about 3 million bushels were on farms and less than a half million bushels were in interior mills, elevators, warehouses and other establishments, as estimated by the Crop Reporting Board; about 3½ million bushels were enumerated at processing plants by the Bureau of the Census; less than a million bushels were reported by the Grain Branch of the Production and Marketing Administration at the 43 terminal markets. Commodity Credit Corporation steel and wooden bins had been emptied of old soybeans by October 1. As total stocks in these same positions on July 1, 1945 were 46½ million bushels, disappearance between July 1 and October was about 38½ million bushels. Stocks in all positions a year ago were 14.3 million bushels and on October 1, 1943 about 12½ million bushels.

Soybeans processed for oil during the quarter July 1 to October 1, 1945 amounted to 37,428,000 bushels, according to the Bureau of the Census. Slightly less than 32 million bushels were crushed in the same period of 1944 and nearly 29 million bushels in the same quarter of 1943. During the 12-month period ended September 30, 1945, about 152 million bushels were processed for oil, compared with 142 million in the preceding 12 months and 133 million in the season ended September 30, 1943.

New crop soybeans had begun to move into storage in relatively small quantities by October 1, but are not included in these esti-

mates, except as they may appear in the stocks reported at processing plants.

Stocks of Soybeans, October 1, 1945, With Comparisons

Position	Oct. 1, 1944	July 1, 1945	Oct. 1, 1945
	—— Thousand Bushels ——		
On Farms	4,765	7,749	3,005
Int. M.E. & Whses.	1,128	6,031	447
Processing Plants	5,214	26,387	3,547
Terminal Markets	1,323	5,401	815
Steel & Wooden Bins	1,876	957	0
Total All Positions	14,306	46,525	7,814

Stocks of Soybeans in Mills, Elevators and Warehouses and Other Establishments* October 1, 1945, With Comparisons

State	Oct. 1, 1944	July 1, 1945	Oct. 1, 1945
	—— Thousand Bushels ——		
Ohio	112	328	18
Indiana	41	440	71
Illinois	245	2,121	105
Michigan	31	10	4
Minnesota	56	51	43
Iowa	478	2,816	99
Missouri	19	88	12
Nebraska	0	1	0
Kansas	31	19	4
Virginia	16	2	1
North Carolina	4	4	1
Mississippi	5	1	1
Arkansas	1	1	0
Other States	89	149	88
U. S.	1,128	6,031	447

*Excludes stocks in processing plants enumerated by the Bureau of the Census and stocks at 43 terminal markets reported by the Grain Branch, P. & M. A.

● ANALYSIS OF SOYBEAN PRODUCTS. A summary of soybean samples analyzed by Woodson-Tenent Laboratories during November.

Average Chemical Analyses of Soybeans Grown in: Tennessee, Arkansas, Mississippi, Missouri
Oil (oil calculated to 14% moisture) Oil Yields per bushel*

	%	Lbs
Average	17.9	8.3
Month's highest	20.2	9.7
Month's lowest	14.3	6.0

Average Chemical Analyses of Soybeans Grown in: Minnesota, Wisconsin, Michigan, Ohio, Indiana, Illinois, Iowa, Kentucky, Virginia, Kansas, Nebraska
Oil (oil calculated to 14% moisture) Oil Yields per bushel*

	%	Lbs
Average	17.4	8.0
Month's highest	19.2	9.1
Month's lowest	14.9	6.4

	Soybean Moisture	Oil Meal Oil	Protein	Standard
	%	%	%	
Average	12.01	4.62	43.51	55
Month's best	10.74	4.04	47.44	44

	F.F.A.	Gardner Break	Moisture & Volatile
	%	%	%
Average	0.6	0.75	0.12
Month's best	0.5	0.39	0.06

*Calculated 12.50% moisture and 5% oil left in meal.

● SOYBEAN STOCKS. Production and Marketing Administration's commercial grain stock report.

U. S. Soybeans in Store and Afloat at Domestic Markets (1,000 Bu.)

	Dec. 4	Dec. 11	Dec. 18	Dec. 27	Jan. 3
Atlantic Coast	160		117	117	117
Gulf Coast	31	31	19	289	190
Northwestern and Upper Lake	2,066	2,083	1,861	2,077	2,077
Lower Lake	10,847	11,100	11,102	11,096	11,113
East Central	6,501	7,154	6,397	7,031	6,884
West Central, Southwestern & Western	4,908	4,683	4,413	4,202	4,078
Pacific Coast					
Total current week	24,513	25,051	23,909	24,812	24,459
Total year ago	23,861	24,337	24,926	24,711	24,446
Total North American Commercial Soybean Stocks					
Current week	24,604				24,538
Year ago	24,019	24,474	25,045	24,821	24,544

● COMMODITIES OWNED BY USDA. Commodity Credit Corporation listed the following products among others in its December 10 summary of commodities currently held by the U. S. Department of Agriculture.

Basic Commodities Inventory
(acquired mainly in carrying out price support program)

Vegetable Oils—1944 (Lbs.)	10,364,080
Soybeans (Bu.)	5,546,538

Collateral for Loans Held by Commodity Credit Corporation and Lending Agencies

Soybeans (Bu.)	644

General Commodities Inventory
(purchased in past by Office of Supply) in Lbs.

Margarine	24,763,616
Shortening	3,970,826
Soybeans, field type	1,040,000
Vegetable Oils	2,489,899

MODERN MARGARINE

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Owensboro, Ky.

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★ ★ ★

Greendale Soybean Meal

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is being used to full satisfaction by many soybean and other vegetable oil mills.

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Plant: South Lee, Mass.
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J. C. KINTZ CO.
Cedar Rapids, Iowa

● NOVEMBER INSPECTIONS. Inspections of receipts of soybeans decreased in November to a total of 24,782 cars compared with 29,489 cars in October, and 17,111 cars in November 1944, according to inspectors' reports to the Grain Branch of the Production and Marketing Administration. November inspections brought the total for the first two months of the season to 54,271 cars compared with 49,274 cars for the same months of 1944.

The quality of soybeans inspected in November continued good, with 92 percent grading No. 2 or better compared with 93 percent in October, and 85 percent in November 1944.

● OILSEED CAKE AND MEAL. The oilseed cake and meal situation continued very tight and conditions as a whole are practically unchanged, reports Production and Marketing Administration at Chicago. The production of both soybean and oil meal and linseed oil meal continued at or near capacity at most plants, although a few of the flaxseed crushers have closed down. Others will curtail their production shortly in order to stretch out their output as far as possible. It is becoming increasingly difficult for the soybean oil meal crushers to secure beans as reports indicate that very few beans are offered at this time by the country, except on a tradeback basis.

● STANDARD SHORTENING SHIPMENTS. By members of Institute of Shortening Mfgrs., Inc., in pounds.

December 1	7,201,194
December 8	7,275,202
December 15	8,326,836
December 22	7,007,507

Government Orders

● EDIBLE OIL ORDER. In order to prevent excessive diversion of soybean oil to the manufacture of synthetic resins, the U. S. Department of Agriculture has amended WFO 29, limiting the use of soybean oil in synthetic resins each month to one-sixth of the amount used by the manufacturer for this purpose during the first six months of 1945.

Previously, the use of soybean oil for synthetic resins was excluded from the general limitations on the four major vegetable oils contained in WFO 29, because a War Production Board order, restricting the end product, served to limit distribution and use of soybean oil sufficiently. This WPB Order was recently terminated.

● OILS QUOTA CONTINUED. The U. S. Department of Agriculture has announced continuance of the 4 percent emergency increase in the quota of fats and oils granted manufacturers of shortening and cooking and salad oils. The emergency quota, above the regular quota of 88 percent of the average use of fats and oils in the base period 1940-41, was first granted for the quarterly period October 1 to December 31, 1945.

The amendment (No. 24 to War Food Order 42) permits manufacturers to use the additional fats and oils in shortening and cooking and salad oils during the calendar quarter January 1 to March 31. The quota percentage applicable to margarine manufacturers, which is 95 percent of 1944 usage, remains unchanged.

● SOYBEAN OIL IN DAKOTAS. Office of Price Administration by amendment to MPR 53 has established ceiling prices for crude soybean oil in North and South Dakota, to which states the production of the oil has expanded. Maximum price of 11¾ cents a pound, f.o.b. mill in tank car—already in effect for adjacent states—will apply to sales of the product in the Dakotas.

● TERMINATE RESTRICTIONS ON 1944 CROP. The Department of Agriculture terminated War Food Order 110 Nov. 30. The directive was issued Aug. 24, 1944, and restricted the purchase and use of the 1944 soybean crop to promote the orderly marketing of the commodity.